# SUPER●®

# SUPERSERVER 5010H/5010E

### SuperServer 5010H
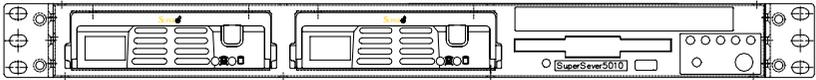


### SuperServer 5010E
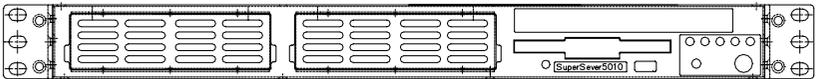


# USER'S MANUAL

Revision 1.1

# Preface

## About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the Super-Server 5010H/5010E. Installation and maintainance should be performed by experienced technicians only.

The SuperServer 5010H/5010E is a high-end single processor 1U rackmount server based on the SC810 1U rackmount server chassis and the Super 370SSR+ (for the 5010H), or the 370SSE+ (for the 5010E) mainboard. The 370SSR+/370SSE+ mainboard supports single Pentium III FCPGA 600 MHz-1GHz processors and Celeron FCPGA/PPGA 300-700 processors and up to 512 MB SDRAM main memory.

## Manual Organization

### Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the SUPER 370SSR+/370SSE+ mainboard and the SC810 chassis, which make up the Super-Server 5010H/5010E.

### Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer 5010H/5010E into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

### Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

### Chapter 4:  System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer 5010H/5010E.

### Chapter 5:  Advanced Motherboard Setup

Chapter 5 provides detailed information on the 370SSR+/370SSE+ motherboard, including the locations and functions of connectors, headers, jumpers, DIP switches and IRQs.  Refer to this chapter when adding or removing processors or main memory and when reconfiguring the motherboard.

### Chapter 6:  Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC810 1U rackmount server chassis.  You should follow the procedures given in this chapter when installing, removing or reconfiguring SCSI or peripheral drives and when replacing system power supply units and cooling fans.

### Chapter 7:  BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

### Appendix A:  BIOS Error Beep Codes and Messages

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# Chapter 1

# Introduction to the SuperServer 5010H/5010E

## 1-1    Overview

The Supermicro SuperServer 5010H/5010E is a high-end single processor, 1U rackmount server that features some of the most advanced technology currently available.   The SuperServer 5010H/5010E is comprised of two main subsystems: the SC810 1U rackmount chassis and the 370SSR+ or 370SSE+ single 370-pin Pentium III FCPGA or Celeron FCPGA/PPGA processor mainboard.   Please refer to our web site for information on operating systems that have been certified for use with the SuperServer 5010H/5010E. (www.supermicro.com)

In addition to the mainboard and chassis, various hardware components may have been included with your SuperServer 5010H/5010E, as listed below.

- One (1) 370-pin Pentium III FCPGA or one Celeron FCPGA/PPGA proces sor*

- One  CPU heat sink

- Up to 512 MB SDRAM (non-ECC supported, non-registered) main memory

- One (1) 1.44" floppy drive

- One (1) slim CD-ROM drive

- One (1) SCA SCSI backplane (5010H only)

- Two (2) SCA SCSI drive carriers (5010H only)

- SCSI  Accessories (5010H only)
  One (1) internal 68-pin Ultra160 SCSI cable for SCA SCSI backplane
  One (1) set of SCSI driver diskettes
  One (1) SCSI manual

- One (1) 5V 32-bit, 33 MHz PCI riser card

- Rackmount hardware (with screws):
  Two (2) rack rail assemblies
  Six (6) brackets for mounting the rack rails to a rack/telco rack

- One (1) CD-ROM containing drivers and utilities:
  Intel'sÔ LANDesk Client Manager
  LAN driver
  SCSI driver (5010H only)

- SuperServer 5010H/5010E User's Manual

*Type and number depends upon the configuration ordered.*

## 1-2   Server Chassis Features

The SuperServer 5010H/5010E is a high-end, scaleable 1U rackmount server platform designed with today's most state-of-the-art features.  The following is a general outline of the main features of the SC810 chassis.

### System Power

When configured as a SuperSever 5010H/5010E, the SC810 chassis includes a 200W power supply.

### SCSI Subsystem (5010H only)

The SCSI subsystem supports two 80-pin SCA Ultra160 SCSI hard drives. (Any standard 1" drives are supported.  SCA = Single Connection Attachment.)  The SCSI drives are connected to an SCA backplane that provides power, bus termination and configuration settings.  The SCSI drives are also hot-swap units.

### Control Panel

The SC810's control panel provides important system monitoring and control information.  LEDs indicate power on, network activity, hard disk drive activity and system overheat conditions.  The control panel also includes a main power button and a system reset button.

## Rear I/O Panel

The SC810 is a 1U rackmount chassis.  Its I/O panel provides one mother-board expansion slot, one COM port (the other is internal), two USB (Exter-nal) headers (5010H only), PS/2 mouse and keyboard ports, a graphics port and two Ethernet ports.  (See Figure 1-1.)

### 5010E



### 5010H



External SCSI (5010H only)

Rear of chassis



Mouse Port

Keyboard Port

USB Ports

COM1 Port

VGA (Graphics) Port

Ethernet Ports
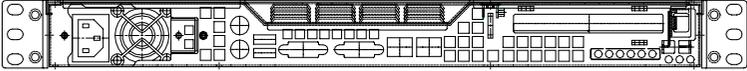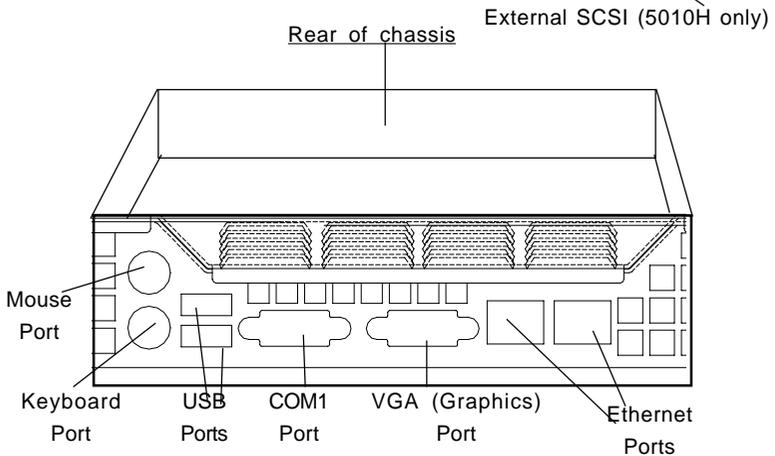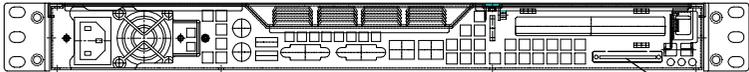
**Figure 1-1.  Rear I/O Panel**

## Cooling System

The SC810 chassis has an innovative cooling design that includes a 10-cm blower system cooling (intake) fan and one optional 4-cm fan that can be installed in the midsection of the chassis.  The blower fan plugs into a chassis fan header on the motherboard and operates at full rpm continu-ously.  If it breaks down, the ambient air temperature inside the chassis will rise and activate an overheat LED.

## 1-3   Mainboard Features

At the heart of the SuperServer 5010H/5010E lies the 370SSR+/370SSE+, a single processor motherboard designed to provide maximum performance. Below are the main features of the 370SSR+/370SSE+.

### Chipset Overview

Intel's 815E chipset is made up of three main components: the Graphics and Memory Controller Hub (GMCH), the I/O Controller Hub (ICH) and the Firmware Hub (FWH).  The GMCH integrates a 133/100/66 MHz system bus controller, a 2D/3D graphics accelerator (AGP2x/4x) discrete graphics card, a 133/100 MHz SDRAM controller and a high-speed hub architecture interface that communicates with the ICH.  The ICH integrates a UDMA/100 controller, USB controllers and other I/O functions (see below).  The FWH stores both system and video BIOS and includes a Random Number Generator (RNG).

#### Graphics and Memory Controller Hub (GMCH)

The GMCH includes the host (CPU) interface, DRAM interface, ICH2 interface and 4xAGP interface for the 815E chipset.  It contains advanced power management logic and supports dual channels for DRAM.  The AGP 2.0 interface supports 4x data transfers and operates at a peak bandwidth of 1066 MB/sec.  The MCH host interface bus runs at 133/100/66 MHz.

#### I/O Controller Hub (ICH2)

The ICH2 is the I/O Controller Hub subsystem on the 370SSR+/370SSE+, which integrates many of the Input/Output functions of the 815E chipset, including  UDMA/100 Bus Master IDE controllers.  It also provides the interface to the PCI Bus and communicates with the MCH over a dedicated hub interface.  In addition to the UDMA/100 Bus Master IDE controllers, this powerful ICH2 also includes two USB controllers that offer 24 Mbps of bandwidth across three ports.  ICH2 also features an enhanced AC'97 interface that supports full surround sound for the Dolby Digital Audio used on DVDs.

#### Firmware Hub (FWH)

The FWH is a component that brings added security and manageability to the PC platform infrastructure.  This device includes an integrated Random

Number Generator (RNG) for stronger encryption, digital signing and security protocols. The FWH stores the system BIOS and video BIOS to eliminate a redundant nonvolatile memory component.

### Processors

The 370SSR+/370SSE+ supports single 370-pin Pentium III FCPGA 600 MHz-1 GHz and Celeron FCPGA/PPGA 300-700 MHz processors with Front Side Bus Speeds of 133/100/66 MHz. Please refer to the support section of our web site for a complete listing of supported processors (http://www.supermicro.com/TechSupport.htm).

### Memory

The 370SSR+/370SSE+ has three (3) 168-pin DIMM $25^0$ sockets that can support up to 512 MB of unbuffered PC133 and PC100 SDRAM. Module sizes of 128MB, 256MB, and 512MB may be used to populate the DIMM slots. The DIMM slots are situated at a 25 degree angle to create a low profile and to promote efficient airflow through the chassis.

### Onboard SCSI (5010H only)

Onboard SCSI is provided with an Adaptec AIC-7899 SCSI controller chip, which supports dual channel, Ultra160 SCSI at a burst throughput rate of 160 MB/sec for each channel. The 370SSR+ provides two SCSI ports: one internal 68-pin LVD Ultra160 connector (on channels A) and one external/internal (shared) 68-pin Ultra160 SCSI connector (channel B).

### PCI Expansion Slots

The 370SSR+/370SSE+ has one 32-bit 33 MHz PCI slot available. One riser card is included with the system for use with 32-bit PCI cards.

### Network Interface Controllers (NIC)

The 370SSR+/370SSE+ supports two Network Interface controllers (NIC) based on Intel's 82559 and 82562 chips. (For the 5010H server that is based on the 370SSR+ Version 1.2 mainboard, two 82559 Ethernet chips are included in the system.)

## Onboard Controllers/Ports

An onboard IDE controller supports one floppy drive and up to four UDMA/100 hard drives or ATAPI devices. Onboard I/O ports include one COM port, two USB ports, PS/2 mouse and keyboard ports, a video (Graphics) port and two LAN (NIC) ports which back each other up in case one port loses connection.

## Other Features

Other onboard features that promote system health include eight voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

## 1-4   CONTACTING SUPERMICRO

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**NOTES**

# Chapter 2

# Server Installation

## 2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer 5010H/5010E up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your SuperServer 5010H/5010E system has come to you with the processor and memory preinstalled. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

## 2-2 Unpacking the SuperServer 5010H/5010E

You should inspect the box the SuperServer 5010H/5010E was shipped in and note if it was damaged in any way. If the server itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer 5010H/5010E. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

## 2-3 Preparing for Setup

The box the SuperServer 5010H/5010E was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

## Choosing a Setup Location:

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

# ! Warnings and Precautions! !

## Rack Precautions:

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

## Server Precautions:

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SCSI drives (5010H) and power supply units to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## 2-4    Installing the SuperServer 5010H/5010E into a Rack

This section provides information on installing the SuperServer 5010H/5010E into a rack unit.  If the 5010H/5010E has already been mounted into a rack, you can skip ahead to Sections 2-5 and 2-6.  There are a variety of rack units on  the market, which may mean the assembly procedure will differ slightly.   The following is a guideline for installing the 5010H/5010E into a rack with the rack rails provided.  You should also refer to the installation instructions that came with the rack unit you are using.

### Identifying the Sections of the Rack Rails:

You should have received two rack rail assemblies with the SuperServer 5010H/5010E.  Each of these assemblies consist of two sections: an inner fixed chassis rail that secures to the 5010H/5010E (A) and an outer fixed rack rail that secures directly to the rack itself (B).  A sliding rail guide sandwiched between the two should remain attached to the fixed rack rail. (See Figure 2-1.)  The A and B rails must be detached from each other to install.

To remove the fixed chassis rail (A), pull it out as far as possible - you should hear a "click" sound as a locking tab emerges from inside the rail assembly and locks the inner rail.  Then depress the locking tab to pull the inner rail completely out.  Do this for both the left and right side rack rail assemblies.
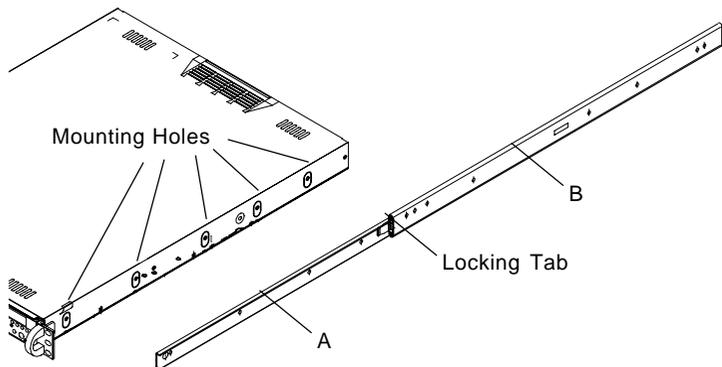


**Figure 2-1.   Identifying the Sections of the Rack Rails**

## Installing the Chassis Rails:

Position the fixed chassis rail sections you just removed along the side of the 5010H/5010E chassis making sure the five screw holes line up. Note that these two rails are left/right specific. Screw the rail securely to the side of the chassis (see Figure 2-2). Repeat this procedure for the other rail on the other side of the chassis. You will also need to attach the rail brackets when installing into a telco rack.

**Locking Tabs:** As you have seen, both chassis rails have a locking tab, which serves two functions. The first is to lock the server into place when installed and pushed fully into the rack, which is its normal position. Secondly, these tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.
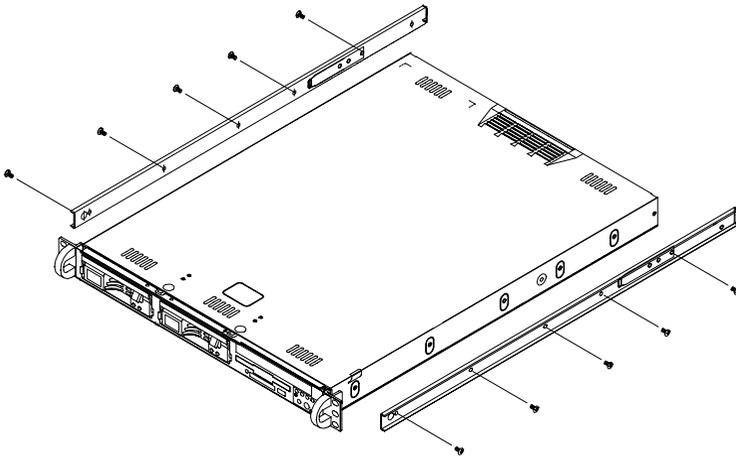


**Figure 2-2. Installing Chassis Rails**

## Installing the Rack Rails:

Determine where you want to place the SuperServer 5010H/5010E in the rack. (See Rack and Server Precautions in Section 2-3.) Position the fixed rack rail/sliding rail guide assemblies at the desired location in the rack, keeping the sliding rail guide facing the inside of the rack. Screw the

assembly securely to the rack using the brackets provided. Attach the other assembly to the other side of the rack, making sure that both are at the exact same height and with the rail guides facing inward.

## Installing the Server into the Rack:

You should now have rails attached to both the chassis and the rack unit. The next step is to install the server into the chassis. Do this by lining up the rear of the chassis rails with the front of the rack rails. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). See Figure 2-3.

When the server has been pushed completely into the rack, you should hear the locking tabs "click". Finish by inserting and tightening the thumbscrews that hold the front of the server to the rack.

**Figure 2-3. Installing the Server into a Rack**
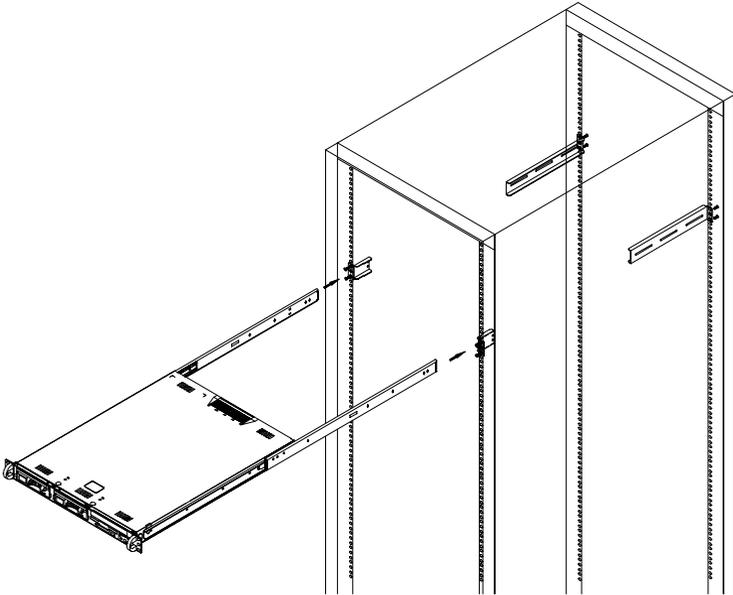
## Installing the Server into a Telco Rack:

If you are installing the SuperServer 5010H/5010E into a Telco type rack, follow the directions given on the previous pages for rack installation. The only difference in the installation procedure will be the positioning of the rack brackets to the rack. They should be spaced apart just enough to accomodate the width of the telco rack.

**Figure 2-4.    Installing the Server into a Telco Rack**
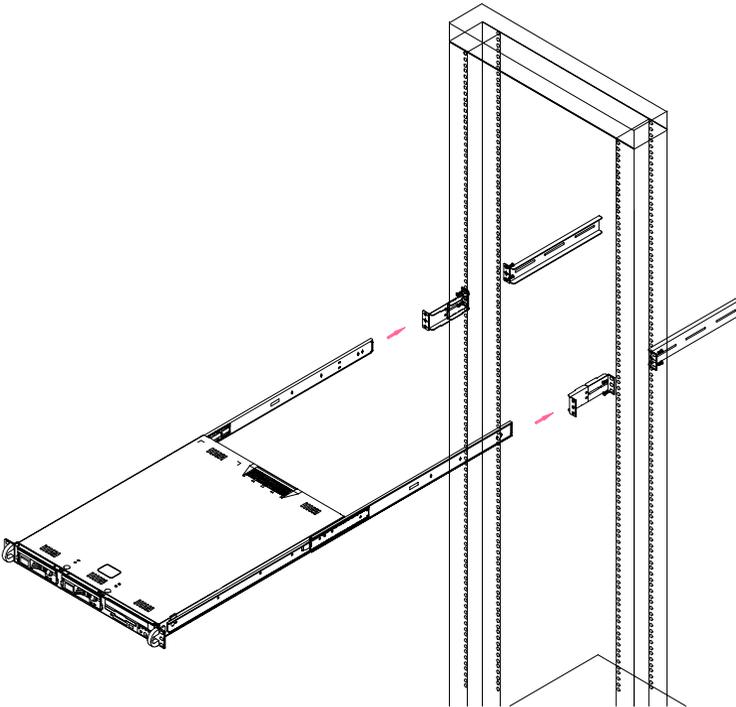
## 2-5    Checking the Motherboard Setup

After you install the 5010H/5010E in the rack, you will need to open the unit to make sure the motherboard is properly installed and all the connections have been made.

**1. Accessing the inside of the 5010H/5010E (see Figure 2-5):**

First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").  Next, depress the two buttons on the top of the chassis to release the top cover.  There is a large rectangular recess in the middle front of the top cover to help you push the cover away from you until it stops.  You can then lift the top cover from the chassis to gain full access to the inside of the server.

**2. Check the CPU (processor):**

You should have one  processor already installed into the system board.  Each processor should have its own heatsink attached.  See Section 5-5 for instructions on processor installation.

**3. Verify the proper CPU core/bus ratio setting:**

The CPU FSB speed is set with jumpers (JP 11, and JP12).  (See Section 5-9 for details.) The CPU speed can also be changed by software control in BIOS (see CPU Speed Setting).  The CPU Speed Setting will show you the actual CPU speed for each FSB speed option selected.

**4. Check the system memory:**

Your 5010H/5010E server system may have come with system memory already installed.  Make sure all DIMMs are fully seated in their slots.  For details on adding system memory, refer to Section 5-5.

**5. Installing add-on cards:**

If desired, you can install an add-on card to the system.  See Section 5-7 for details on installing a PCI add-on card.

## Figure 2-5A.  Accessing the Inside of the SuperServer 5010H (with SCSI  Installed)



Top Chassis Cover (Removed)

Cover Release Buttons

PCI Riser Card Retention Rail

Cover Recess

370SSR+ Motherboard

Blower Fan

Power Supply

CPU Heatsink

System Memory

SCSI Drive

Air Seal **(\*See note on Page 2-10)**

CD-ROM Drive

Control Panel

Floppy Drive
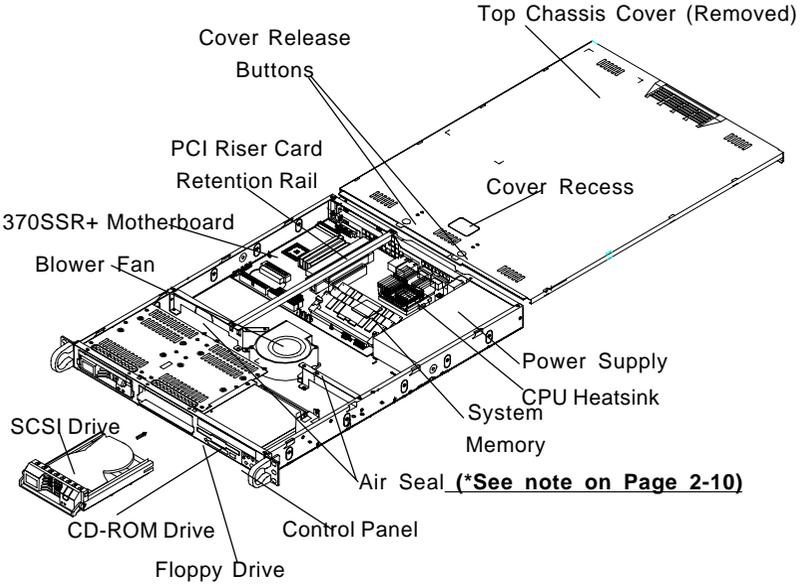
**5010H**

## Figure 2-5B.  Accessing the Inside of the SuperServer 5010E (with IDE Installed)



Blower  Fan

IDE Drive

IDE HARD DRIVE

System
Memory

CD-ROM Drive

Control Panel

Floppy  Drive
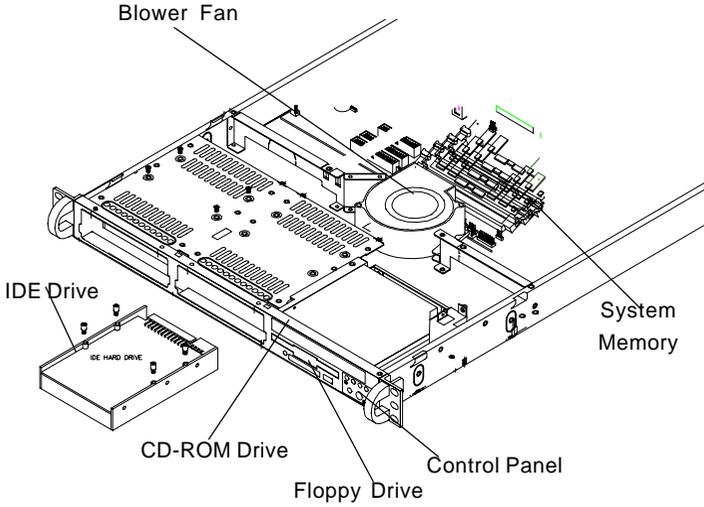
**5010E**

**6. Check all cable connections and airflow:**

Make sure all power and data cables are properly connected and not blocking the airflow. See Section 5-3 for details on cable connections. Also, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis. **(\*Note: Make sure that the air seals are properly installed.)**

## 2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SCSI drives (5010H only) and SCA backplane have been properly installed and all connections have been made.

**1. Accessing the drive bays:**

All drives can be accessed from the front of the server. For servicing the CD-ROM and floppy drives, you will need to remove the top chassis cover. The SCSI disk drives can be installed and removed from the front of the chassis without removing the top chassis cover.

**2. Installing a CD-ROM and floppy disk drives:**

Refer to Section 6-4 if you need to reinstall a CD-ROM and/or floppy disk drive to the system.

**3. Check the SCSI disk drives: (5010H)**

Depending upon your system's configuration, your system may have one or two SCSI drives already installed. If you need to install SCSI drives, please refer to Section 6-4.

**4. Check the airflow:**

Airflow is provided by a 10-cm input fan and one (optional) 4-cm cooling fan. The system component layout was carefully designed to promote sufficient airflow through the small 1U rackmount space. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

**5. Supplying power to the system:**

The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

Notes

# Chapter 3

# System Interface

## 3-1    Overview

There are several LEDs on the control panel as well as others on the SCSI drive carriers and the motherboard to keep you constantly informed of the overall status of the system as well as the activity and health of specific components.  There are also two buttons on the chassis control panel and an on/off switch on the power supply.  This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

## 3-2    Control Panel Buttons

There are two push-button buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

RESET

● **RESET:**  The reset switch reboots the system.
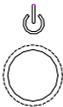
● **POWER:**   This is the main power switch, which is used to apply or turn off the main system power.  Turning off system power with this button removes the main power but keeps standby power supplied to the system. (See also the power supply on/off switch in Section 3-5.)

## 3-3 Control Panel LEDs

The control panel located on the front of the SC810 chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

● **Overheat:** Indicates an overheat condition in the chassis. This may be caused by cables obstructing the airflow in the system, or the ambient room temperature being too warm. You should also check to make sure that the chassis cover is installed and that all fans are present and operating normally. Finally, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the motherboard area of the chassis.

NIC2

● **NIC2:** Indicates network activity on LAN2 when flashing.

NIC1

● **NIC1:** Indicates network activity on LAN1 when flashing.

● **HDD:** Indicates IDE channel activity. On the SuperServer 5010H/5010E, this light indicates CD-ROM drive activity when flashing.

- **Power:** Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

## 3-4    SCSI Drive Carrier LEDs (5010H only)

Each SCSI drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SCSI drive carrier indicates drive activity. A connection to the SCSI SCA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** A SAF-TE compliant backplane is needed to activate the red LED to indicate a drive failure. (A SAF-TE compliant SCSI backplane is optional on the 5010H/5010E.) If one of the SCSI drives fail, you should be notified by your system management software. Please refer to Section 6-4 for instructions on replacing failed SCSI drives.

## 3-5    Power Supply Switch

An on/off switch is located on the back of the power supply. This switch should normally be on at all times. Turning this switch to the off position removes both the main and standby power from the system, as opposed to the power button located on the control panel on the front of the chassis.

## 3-6    Motherboard LEDs

- **PW (Power_On) LED**

There is one PW (Power_on) LED on the motherboard. When illuminated, it indicates that system power is present on the motherboard. This LED is located in the corner of the 370SSR+/370SSE+ near the DIMM2 slot.

● **DA1 (SCSI LED) Indicator (5010H only)**

There is one SCSI LED Indicator (DA1) on the motherboard. When illumi-
nated, it indicates that SCSI is active. This SCSI LED (DA1) is located near
Ultra III LVD Channel A (JA1) on the 370SSR+ mainboard.

# Chapter 4

# System Safety

## 4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer 5010H/5010E from damage:

● Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

● Do not work alone when working with high voltage components.

● Power should always be disconnected from the system when removing or installing main system components, such as the motherboard, the MEC, memory modules and IDE and floppy drives. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

● When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

● Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

● Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

● The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

● Motherboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery (located near the  AGP slot) is installed upside down, which will reverse its polarites.  This battery must be replaced only with the same or an equivalent type recommended by the manufacturer.  Dispose of used batteries according to the manufacturer's instructions.

## 4-2   General Safety Precautions



Follow these rules to ensure general safety:

● Keep the area around the SuperServer 5010H/5010E clean and free of clutter.

● The SuperServer 5010H/5010E weighs approx. 25 lbs. (11.8 kg.) when fully loaded.  When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight.  Always keep your back straight and lift with your legs.

● Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

● While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

● Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

● After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

## 4-3   ESD Precautions

!

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other.  An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards.  The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

● Use a grounded wrist strap designed to prevent static discharge.

● Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

● Touch a grounded metal object before removing the board from the antistatic bag.

● Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

● Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

● When handling chips or modules, avoid touching their pins.

● Put the motherboard and peripherals back into their antistatic bags when not in use.

● For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

**Notes**

# Chapter 5

# Advanced Motherboard Setup

This chapter covers the steps required to install the 370SSR+/370SSE+ motherboard into the SC810 chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are on pages 5-12 and 5-13. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

## Tools Required

The only tools you will need to install the 370SSR+/370SSE into the chassis are a long and a short Philips screwdriver.

## 5-1   Handling the 370SSR+/370SSE+ Motherboard

Electric-static discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). Also note that the size and weight of the 370SSR+/370SSE+ motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the 370SSR+/370SSE+ motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

### Precautions

- Use a grounded wrist strap designed to prevent Electric Static Discharge (ESD).
- Touch a grounded metal object before removing any board from its anti-static bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-

static bags when not in use.

• For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

### Unpacking

The motherboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

## 5-2 Motherboard Installation

This section explains the first step of physically mounting the 370SSR+ (5010H), 370SSE+(5010E) into the SC810 chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. **Accessing the inside of the 5010H/5010E (see Figure 2-5):**
   Two release buttons are located on the top cover of the chassis. Depressing both of these buttons while pushing the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. (If already installed in a rack, you must first release the retention screws that secure the unit to the rack. Then grasp the two handles on either side and pull the unit straight out until the rails lock into place.)

2. **Check compatibility of motherboard ports and I/O shield:**
   The 370SSR+/370SSE+ requires a chassis big enough to support a 12" x 8.7" motherboard, such as Supermicro's SC810 1U rackmount. Make sure that the I/O ports on the motherboard align properly with their respective holes in the I/O shield at the back of the chassis.

3. **Mounting the motherboard onto the motherboard tray:**
   Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible on the bottom of the chassis. Insert screws into all the mounting holes on your motherboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the motherboard ground to provide a continuous ground for the system.

## 5-3   Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board.  These include the data (ribbon) cables for the peripherals and control panel and the power cables.

### Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back.  If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations).  The following data cables (with their locations noted) should be con-nected.  (See the layout on page 5-10 for connector locations.)

- IDE Device Cables (J18 and J19)

- Floppy Drive Cable (J26)

- SCSI Device Cables (JPA1, JPA2, JPA3) (5010H only)

- Control Panel Cable (JF1, see next page)

### Connecting Power Cables

The 370SSR+/370SSE+ has a 20-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. See Section 5-8 for power connector pin definitions.

## Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to JP4 of the Control Panel PCB board, located just behind the system status LEDs on the chassis. The control signals are all on the even numbered pins. See pages 5-12 to 5-14 for details and pin descriptions.

In addition to the 2-pin Power LED header on JF1, there is a 3-pin header for the same function at J50 on the motherboard, which is located near JF1.

**Figure 5-1. Control Panel Header Pins**

| | | | |
|---|---|---|---|
| Control | ○ | ○ | Power | Power LED (pins 15-16) |
| Control | ○ | ○ | Power | HDD LED (pins 13-14) |
| Control | ○ | ○ | Power | NIC1 LED (pins 11-12) |
| Control | ○ | ○ | Power | NIC2 LED (pins 9-10) |
| Control | ○ | ○ | Power | Overheat LED (pins 7-8) |
| Control | ○ | ○ | | X (Key) |
| Ground | ○ | ○ | Reset | Reset Button (pins 3-4) |
| Power | ○ | ○ | Control | Power Button (pins 1-2) |

2   1

**JF1**

Power LED

| | |
|---|---|
| ○ | Control |
| ○ | x |
| ○ | Power |
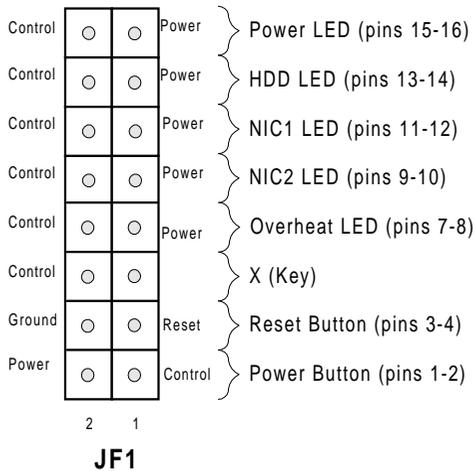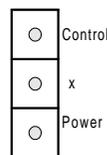
**J50**

## 5-4   I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Mouse
(Green)

LAN1    LAN2

Keyboard   USB      COM1 Port      VGA  Graphics
(Purple)   Ports    (Turquoise)    Port (Blue)
           (Black)
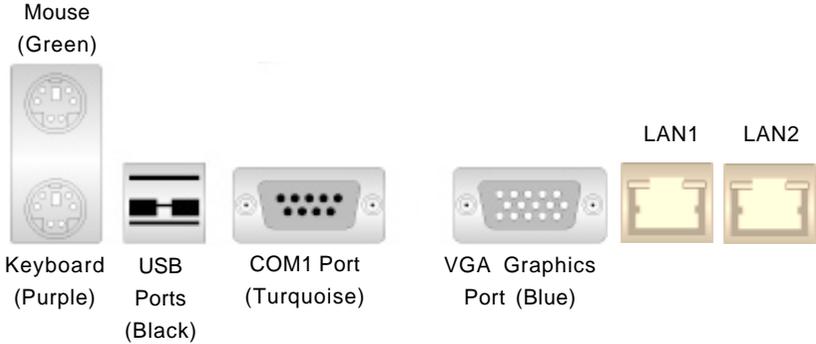
**Note:** The COM2 Port is a header on the motherboard, located behind the mouse/keyboard ports.

**Figure 5-2.   I/O Ports**

## 5-5   Installing Processors

**Avoid placing direct pressure to the top of the pro cessor package.  Always connect the power cord last and always remove it before adding, removing or changing any hardware components.**

**1.     Installing the FCPGA processors:**

The 370SSR+ /370SSE+has one 370-pin socket, which support Intel Pentium III FCPGA and Celeron FCPGA/PPGA processors. Lift the lever on the FCPGA socket and insert the processor (with the heat sink attached) keeping the notched corner oriented toward pin one on the socket.  Make sure the processor is fully seated in the socket and and then close the lever.(See Figure 5-4 for views of a 370-pin FCPGA socket before and after processor installation.)

**2.    Attaching heat sinks to the processors:**

One passive heat sink  has been included with your SuperServer 5010H/ 5010E.  Secure the heat sink to the processor with a suitable thermal compound to best conduct the heat from the processor to the heat sink.  **Make sure that you apply the compound evenly on the CPU's die, and that good contact is made between the CPU chip (the die) and the heat sink.  Insufficient contact, inproper types of heat sink or inproper amount of thermal compound can cause the processor to overheat, which may crash the system.**   (Refer to Figure 5-3b for Heat Sink Installation.)

**4.    Removing the processors:**

To remove the processor from the motherboard, simply follow the installation process in reverse order.



**Figure 5-3A.    FCPGA Socket: Empty and with Processor Installed**
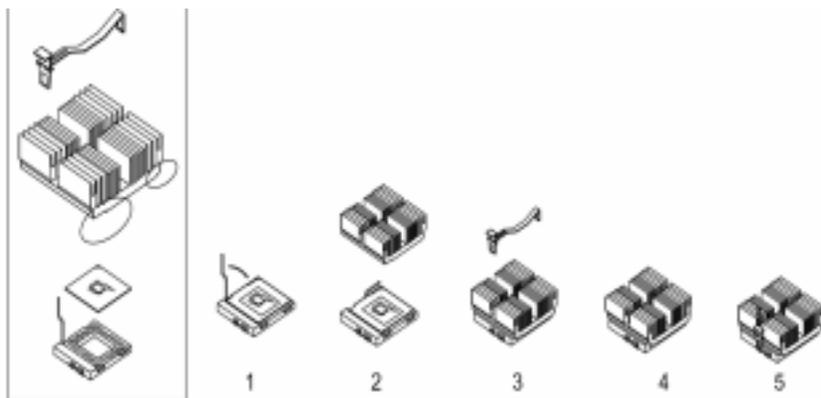


**Figure 5-3b.    Heat Sink Installation Procedures**

## 5-6    Installing Memory

⚠ !    **CAUTION! Exercise extreme care when install-
ing or removing DIMM modules to prevent any
possible damage.  The MEC must be populated
in the manner described in Step 2 below.**

**1.    Memory support:**
The 370SSR+/SSE+ supports 64MB/128MB/256MB/512 MB unbuffered
SDRAM in three 25-degree DIMMs.  PC133 and PC100 memory are both
supported at their respective speeds.  However, if three DIMM modules
are installed, the memory will run at  100MHz even if PC133 memory is
used due to chipset limitations.

**2.    Installing memory modules:**
Insert each DIMM module into its slot in a 25-degree angle.  Pay attention
to the two notches along the bottom of the module to prevent inserting
the DIMM module incorrectly.  Gently press down on the DIMM module
until it snaps into place in the slot (see Figure 5-4).

**Figure 5-4.   Side View of DIMM Installation into Slot**
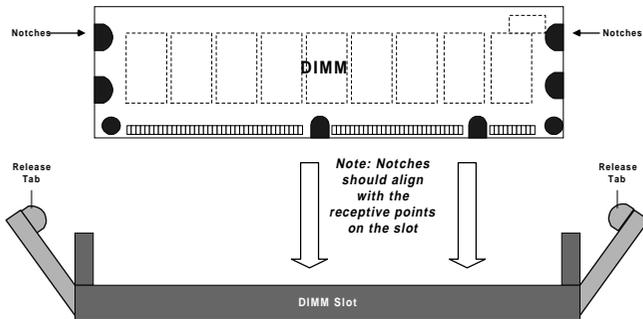


To Install: Insert module vertically and press down until it snaps into
place.  Pay attention to the bottom notches.       To Remove:
Use your thumbs to gently push each release tab outward to free the
DIMM from the slot.

## 5-7   Adding PCI Cards

**1.    32-bit PCI slot:**

The 370SSR+/370SSE+ has one 32-bit MHz 5V PCI slot available.  A riser card designed specifically for using this slot in a 1U rackmount chassis is included with your system.  This riser card allows an installed PCI card to sit at a 90 degree angle so it can fit inside the chassis.  This  riser card accommodates 32-bit, 33 MHz 5V PCI cards.  Figure 5-5 shows the riser card.

**2.    PCI card installation:**

Before installing a PCI add-on card, locate the PCI riser card (see Step1).  Begin by removing the I/O shield for the PCI slot.  Then fully seat the PCI card into the riser card and screw it into the metal retention rail (shown in Figure 2-5).  Finally, insert the riser card into the PCI slot on the motherboard, pushing down with your thumbs evenly on both sides of the card.  (See Figure 5-6 for location.)  Finish by using a screw to secure the top of the card shield to the chassis.  The I/O shield protects the motherboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering the slot.

**Figure 5-5.    5V, 32-bit 33 MHz Riser Card**





PCI Riser Card

CPU Socket

**370SSR+ Motherboard**

Memory Modules

**5010H**



PCI Riser Card

CPU Socket

Memory Modules

**370SSE+ Motherboard**

**5010E**
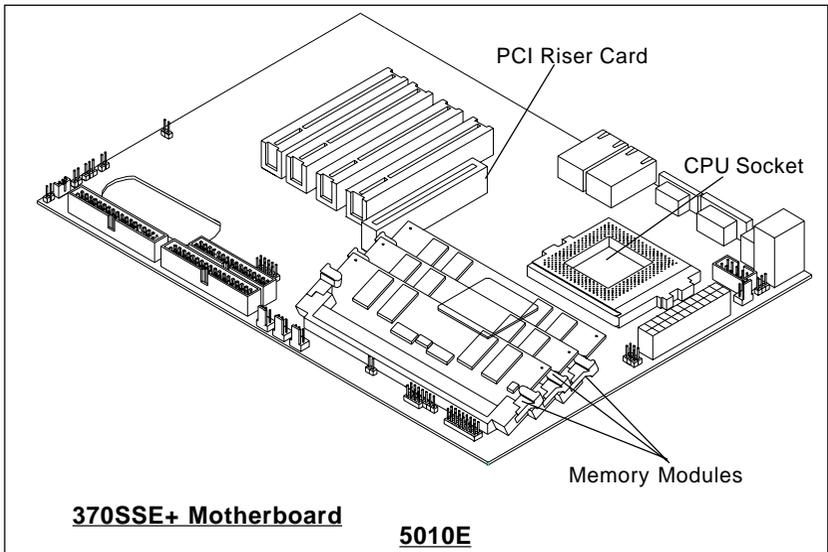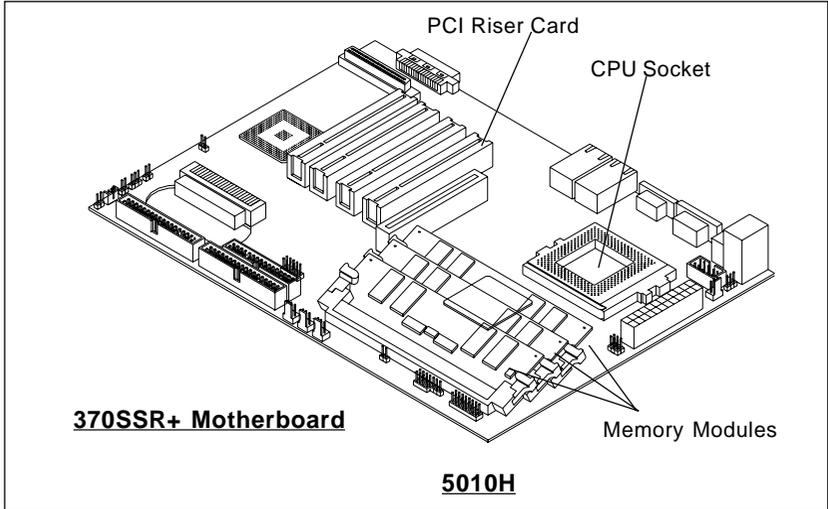
**Figure 5-6.    Adding PCI Cards**

## Figure 5-7A. Super 370SSR+ Layout

(not drawn to scale)
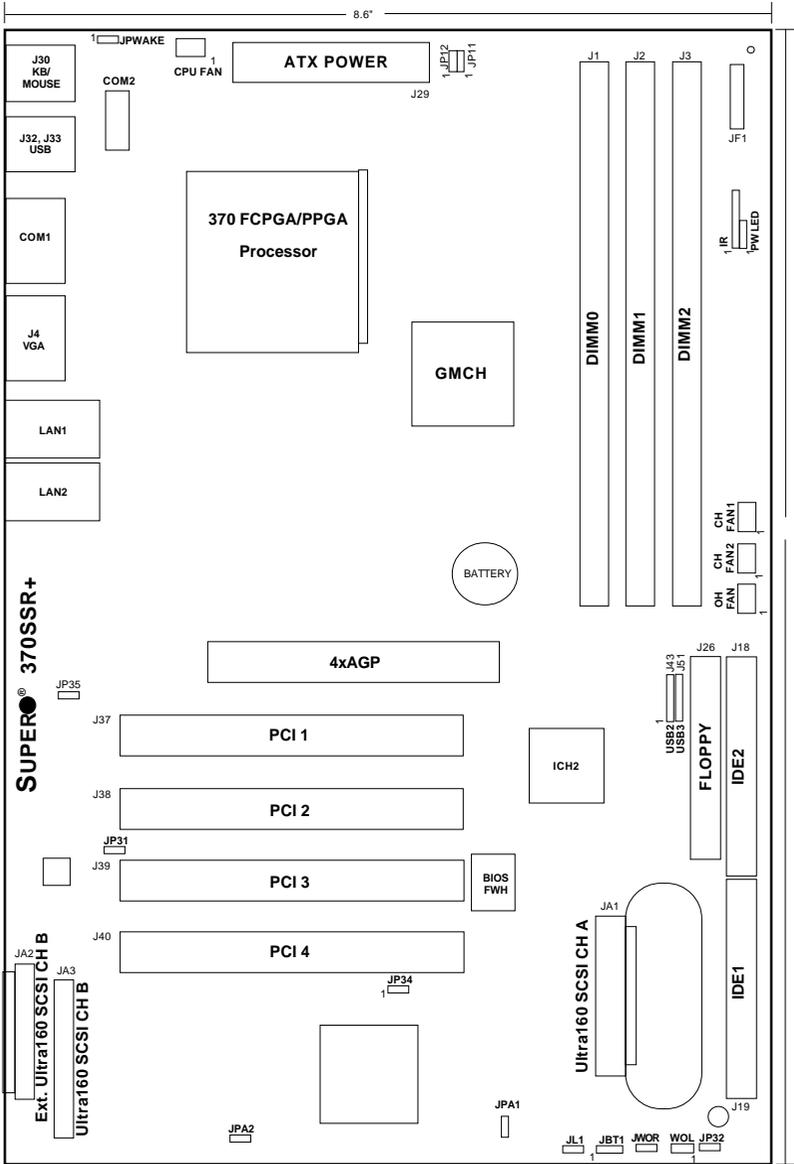
## 370SSR+ Quick Reference (for 5010H)

| **Jumpers** | **Description** | **Default Setting** |
|---|---|---|
| JBT1 | CMOS Clear | Pins 1-2 (Normal) |
| JP11/12 | Front Side Bus Speed | Both: Pins 1-2 (Auto) |
| JP31 | LAN2 Enable/Disable | Closed (Enabled) |
| JP32 | Speaker En/Disable | Closed (Enabled) |
| JP35 | LAN1 Enable/Disable | Closed (Enabled) |
| JPA1 | SCSI Ch A Termination | Open (Terminated) |
| JPA2 | SCSI Ch B Termination | Open (Terminated) |
| JPWAKE | Keyboard Wake-Up | Pins 1-2 (Disabled) |

| **Connectors** | **Description** |
|---|---|
| COM1/COM2 | COM1/COM2 Serial Port Connector |
| CPU/CH/OH FAN | CPU/Chassis/Overheat Fan Headers |
| J1, J2, J3 | Memory (DIMM) Slots |
| JA1 | Ultra160 SCSI Conn. Channel A |
| JA2 | Ext. Ultra160 SCSI Conn. Channel B |
| JA3 | Ultra160 SCSI Conn. Channel B |
| J18, J19 | IDE Hard Disk Drive Connectors |
| JP26 | Floppy Disk Drive Connector |
| J29 | ATX Power Connector |
| J30 | PS/2 Keyboard/Mouse |
| J32, J33, J43, J51 | Universal Serial Bus Ports |
| JF1 | Front Control Panel |
| JL1 | Chassis Intrusion Header |
| JOH | Overheat LED |
| JWOR | Wake-On-Ring Header |
| LAN1/LAN2 | Ethernet Port 1/2 |
| VGA | VGA Port (monitor) |
| WOL | Wake-on-LAN Header |

Also see the figures on pages 5-4, 5-5 for the I/O ports and the Front Control Panel (JF1) connectors.

Jumpers not indicated are for test purposes only.

(*Please refer to Sections 5-8, 5-9, and 5-10 for detailed information on jumper settings and pin definitions.)

## Figure 5-7B. Super 370SSE+ Layout
(not drawn to scale)
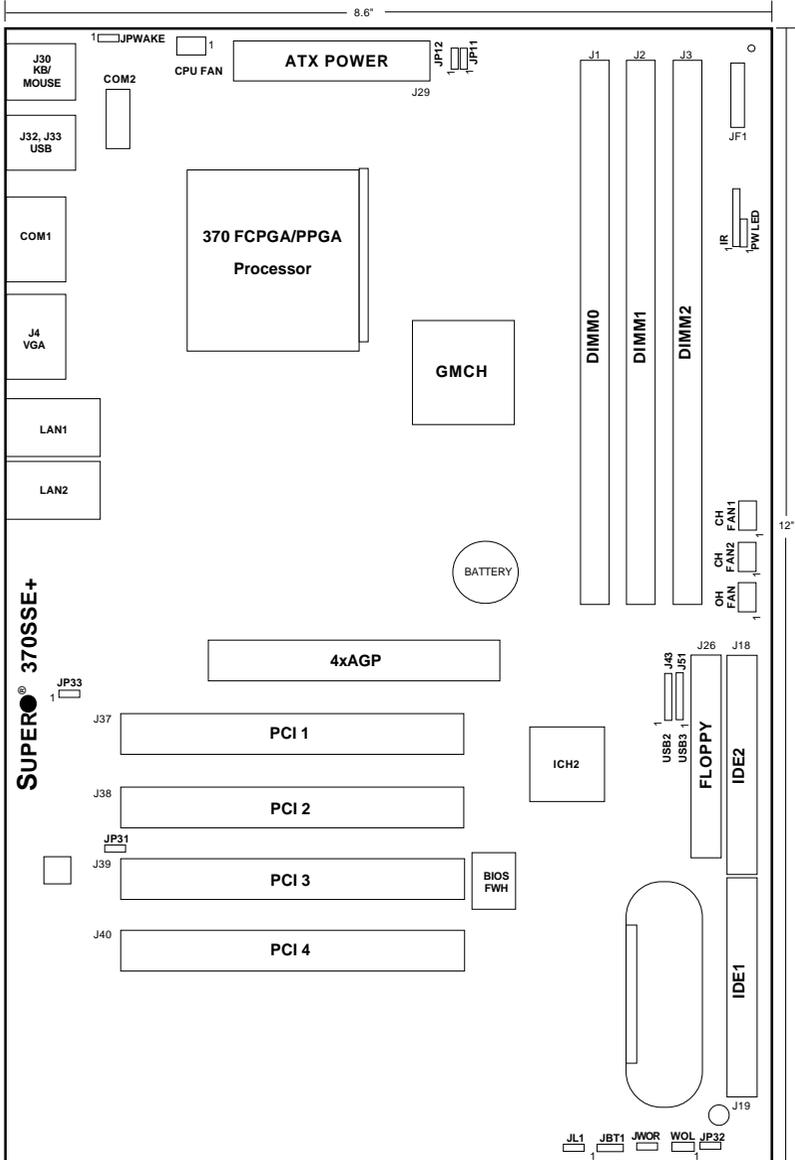
## 370SSE+ Quick Reference (5010E only)

| Jumpers | Description | Default Setting |
|---------|-------------|-----------------|
| JP11/12 | Front Side Bus Speed | Both: Pins 1-2 (Auto) |
| JP31 | LAN2 Enable/Disable | Closed (Enabled) |
| JP32 | Speaker En/Disable | Closed (Enabled) |
| JP33 | LAN1 Enable/Disable | Pins 1-2 (Enabled) |
| JPWAKE | Keyboard Wake-Up | Pins 1-2 (Disabled) |

| Connectors | Description |
|------------|-------------|
| COM1/COM2 | COM1/COM2 Serial Port Connector |
| CPU/CH/OH FAN | CPU/Chassis/Overheat Fan Headers |
| J1, J2, J3 | Memory (DIMM) Slots |
| J18, J19 | IDE Hard Disk Drive Connectors |
| JP26 | Floppy Disk Drive Connector |
| J29 | ATX Power Connector |
| J30 | PS/2 Keyboard/Mouse |
| J32, J33,J43,J51 | Universal Serial Bus Ports |
| JF1 | Front Control Panel |
| JL1 | Chassis Intrusion Header |
| JOH | Overheat LED |
| JWOR | Wake-On-Ring Header |
| LAN1/LAN2 | Ethernet Port 1/2 |
| VGA | VGA Port (monitor) |
| WOL | Wake-on-LAN Header |

Also see the figures on pages 5-4, 5-5 for the I/O ports the Front Control Panel (JF1) connectors.

Jumpers not indicated are for test purposes only.

(*Please refer to Sections 5-8, 5-9, and 5-10 for detailed information on jumper settings and pin definitions.)

## 5-8 Connector Definitions

### Power Supply Connector

The primary power supply connec-
tor on the 370SSR+/370SSE+ is
designated as ATX POWER. This
is a 20-pin connector. Attach an
ATX power supply cable to J29 by
aligning the tab on the connector.
(Refer to the table on the right for
pin definitions.)

**ATX Power Supply 20-pin Connector**
**Pin Definitions**

| Pin Number | Definition | Pin Number | Definition |
|---|---|---|---|
| 1 | +3.3V | 11 | 3.3V |
| 2 | +3.3V | 12 | -12V |
| 3 | Ground | 13 | Ground |
| 4 | +5V | 14 | PS-ON |
| 5 | Ground | 15 | Ground |
| 6 | +5V | 16 | Ground |
| 7 | Ground | 17 | Ground |
| 8 | PW-OK | 18 | -5V |
| 9 | 5VSB | 19 | +5V |
| 10 | +12V | 20 | +5V |

### Infrared Connector

The infrared connectors are lo-
cated on pins 1-5 of J45 for the
370SSR+/370SSE+. (Refer to the
table on the right for pin defini-
tions.) See the Technical Support
section of our web page for infor-
mation on the infrared devices you
can connect to the system.

Infrared Pin Definitions

| Pin Number | Definition |
|---|---|
| 1 | +5V |
| 2 | Key |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |
| 6 | *NC |

**J45**

### Chassis Intrusion

The Chassis Intrusion header is
located on JL1 See board layout
for the location. (See the table on
the right for pin definitions.)

Chassis Intrusion Pin Definitions

| Pin Number | Definition |
|---|---|
| 1 | Intrusion Input |
| 2 | Ground |

**(JL1)**

(*Note: NC indicates "no connec-
tion".)

### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. When illuminated, this LED indicates that power is applied to the system. There is also a 3-pin header for the Power LED located at J50. See the tables on the right for pin definitions and Figure 5-1 for pin locations.

**Power LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 15 | Power |
| 16 | Control |

**Power LED Pin Definitions (J50)**

| Pin Number | Definition |
|---|---|
| 1 | Control |
| 2 | x |
| 3 | Power |

### HDD LED

The Hard Disk Drive LED connection is located on pins 13 and 14 of JF1. This provides an indication of IDE disk activity on the control panel. Refer to the table on the right for pin definitions and Figure 5-1 for pin locations.

**HDD LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 13 | +5v |
| 14 | HD Active |

### NIC1 LED

The Network Interface Controller 1 LED connection is located on pins 11 and 12 of JF1. This header is used to display network activity on LAN (Ethernet) port 1. Refer to the table on the right for pin definitions and Figure 5-1 for pin locations.

**NIC1 LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 11 | Power |
| 12 | Control |

### NIC2 LED

The Network Interface Controller 2 LED connection is located on pins 9 and 10 of JF1. This header is used to display network activity on LAN (Ethernet) port 2. Refer to the table on the right for pin definitions and Figure 5-1 for pin locations.

**NIC2 LED Pin Definitions (JF1)**

| Pin Number | Definition |
|---|---|
| 9 | Power |
| 10 | Control |

### Overheat LED **(JOH)**

Pins 7 and 8 of JF1 are for the Overheat LED, which provides you with advanced warning of chassis overheating. This LED will also illuminate if the blower fan fails, which will cause the chassis temperature to rise. Refer to the table on the right for pin definitions and Figure 5-1 for pin locations.

**Overheat LED
Pin Definitions
(JF1)**

| Pin Number | Definition |
|---|---|
| 7 | Power |
| 8 | Control |

### Reset

The Reset connection is located on pins 3 and 4 of JF1. This connector attaches to the Reset button on the control panel, which allows you to reboot the system. Refer to the table on the right for pin definitions and Figure 5-1 for pin locations.

**Reset Button
Pin Definitions
(JF1)**

| Pin Number | Definition |
|---|---|
| 3 | Reset |
| 4 | Ground |

### PWR_ON

The PWR_ON connection is located on pins 1 and 2 of JF1. This connector attaches to the Power button on the control panel, which allows you to turn on and off the power to the system. The user can also configure this button to function as a suspend button. (See the Power Button Mode setting in BIOS.) To turn off the power when set to suspend mode, hold down the power button for at least 4 seconds. Refer to the table on the right for pin definitions and Figure 5-1 for pin locations.

**PWR Button
Pin Definitions
(JF1)**

| Pin Number | Definition |
|---|---|
| 1 | PW_ON |
| 2 | Power |

## Universal Serial Bus (USB)

Two External Universal Serial Bus connectors (USB0 and USB1) are located on J32, J33, and two Internal USB headers (USB2, USB3) are located on J43, J51. Refer to the tables on the right for pin definitions.

### Fan Headers*

There are several fan headers on the 370SSR+/SSE+ that provide cooling for various components. In addition to one fan header for the processor (located near the ATX Power Supply), there are one overheat and two chassis fan headers located next to the DIMM modules. When installed in the SC810 1U rackmount chassis, only the main blower fan is used. The blower fan should be connected to the chassis fan2 (blow fan) header. See the motherboard layout on page 5-10 for locations. Refer to the table on the right for pin definitions. **Note: The maximum current limitation for the onboard fans is 0.6 amps for each, not to exceed 1.25 amps for any two fans. I.e. both CPU fans, both chassis fans or both overheat fans.**

### Serial Ports

Serial connector COM1 is located beside the VGA port (see Figure 5-8). COM2 is a header located behind the mouse/keyboard ports. See the motherboard layout on page 5-10 for locations. See the table on the right for pin definitions.

**Universal Serial Bus Pin Definitions**

| J32 | | J33 | |
|---|---|---|---|
| Pin Number | Definition | Pin Number | Definition |
| 1 | +5V | 1 | +5V |
| 2 | P0- | 2 | P0- |
| 3 | P0+ | 3 | P0+ |
| 4 | Ground | 4 | Ground |
| **J43** | | **J51** | |
| Pin Number | Definition | Pin Number | Definition |
| 1 | +5V | 1 | +5V |
| 2 | P0- | 2 | P0- |
| 3 | P0+ | 3 | P0+ |
| 4 | Ground | 4 | Ground |
| 5 | key | 5 | Ground |

**Fan Header Pin Definitions**
**(CPU, CHASSIS and OH FANs)**

| Pin Number | Definition |
|---|---|
| 1 | Ground (black) |
| 2 | +12V (red) |
| 3 | Tachometer |

* Caution: These fan headers are DC power.

**Serial Port Pin Definitions**
**(COM1, COM2)**

| Pin Number | Definition | Pin Number | Definition |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | Serial In | 7 | RTS |
| 3 | Serial Out | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | 10 | NC |

### ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J30. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See Figure 5-8.)

**PS/2 Keyboard and Mouse Port Pin Definitions (J30)**

| Pin Number | Definition |
|---|---|
| 1 | Data |
| 2 | NC |
| 3 | Ground |
| 4 | VCC |
| 5 | Clock |
| 6 | NC |

### LAN1/LAN2 Ports

Two Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables. Two LEDs on each indicate a successful connection (yellow) and activity (green).



RJ45 Ethernet Port

### Wake-On-Ring

The Wake-on-Ring (JWOR) header allows your computer to receive and be "woken up" by an incoming call when in the suspend state. Refer to the table on the right for pin definitions. The 370SSR+/ 370SSE+ meets the PCI 2.2 standard, which provides the PME function to support WOR and WOL. You must also have a WOR card and cable to use WOR.

**Wake-on-Ring Pin Definitions (JWOR)**

| Pin Number | Definition |
|---|---|
| 1 | Ground |
| 2 | Wake-up |

### Wake-On-LAN

The Wake-On-LAN (WOL) header allows the system to be woken up upon receiving an appropriate signal via the LAN. You must enable the LAN Wake-Up setting in BIOS to use this feature and have a LAN card with a Wake-on-LAN connector and cable. Refer to the table on the right for pin definitions.

**Wake-On-LAN Pin Definitions (WOL)**

| Pin Number | Definition |
|---|---|
| 1 | +5V Standby |
| 2 | Ground |
| 3 | Wake-up |

# 5-9   Jumper Settings

### Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings.  Jumpers create shorts between two pins to change the function of the connector.  Pin 1 is identified with a square solder pad on the printed circuit board.  See the motherboard layout pages for jumper locations.

**Note: Closed refers to the jumper being set over both pins on a two-pin jumper header. Open refers  to the jumper being set over a single pin of a two-pin jumper.**
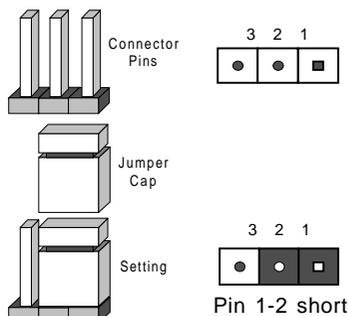
### Front Side Bus Speed

The FSB speed is set with JP11 and JP12. The table on the right displays the settings for these two jumpers. The CPU speed can also be changed by software control in BIOS (see CPU Speed setting). The CPU Speed setting will show you the actual CPU speed for each FSB speed option selected.

**Note:** If the system does not reboot after changing the CPU speed, 1) clear CMOS and reboot (as described on the next page) and then, 2) set the correct CPU speed with the BIOS setting mentioned above.

**Front Side Bus Speed Jumper Settings (JP11, JP12)**

| JP11 | JP12 | FSB Speed |
|------|------|-----------|
| 1-2  | 1-2  | Auto      |
| 2-3  | 2-3  | 66 MHz    |
| 1-2  | 2-3  | 100 MHz   |
| 2-3  | 1-2  | 133 MHz   |

**\* Note: The Auto setting allows the CPU to set the speed.**

### CMOS Clear

Refer to the table on the right for setting JBT1 to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

**CMOS Clear Jumper Settings (JBT1)**

| Jumper Position | Definition |
|---|---|
| 1-2 | Normal |
| 2-3 | CMOS Clear |

### Speaker Enable/Disable

Jumper JP32 allows you to enable or disable the onboard speaker. Refer to the table on the right for jumper settings.

**Speaker Enable/Disable (JP32)**

| | |
|---|---|
| Open | Disabled |
| Closed | Enabled |

### Onboard LAN Enable/Disable

**SSE+ (Rev. 1.1, Rev. 1.11):JP31, JP33**
**SSR+/SSE+ (Rev.1.2 & above):JP31, JP35**

Change the setting of jumpers listed in the tables on the right to enable or disable LAN1 and LAN2 on your motherboard, respectively.

**Onboard LAN2 Enable/Disable Jumper Settings (JP31)**

| Jumper Position | Definition |
|---|---|
| Closed | Enabled |
| Open | Disabled |

**Onboard LAN1 Enable/Disable Jumper Settings (JP33)**

| Jumper Position | Definition |
|---|---|
| 1-2 | Enabled |
| 2-3 | Disabled |

**Onboard LAN1 Enable/Disable Jumper Settings (JP35)**

| Jumper Position | Definition |
|---|---|
| Closed | Enabled |
| Open | Disabled |

### LVD Channel A SCSI Termination Enable/Disable (5010H only)

Jumper JPA1 allows you to enable or disable termination for the LVD Channel A SCSI connector. The normal (default) position is open to enable SCSI termination. See the table on the right for jumper settings.

**LVD CH A SCSI Termination Jumper Settings (JPA1)**

| Jumper Position | Definition |
|---|---|
| Open | Enabled |
| Closed | Disabled |

### LVD Channel B SCSI Termination Enable/Disable (5010H only)

Jumper JPA2 allows you to enable or disable termination for the LVD Channel B SCSI connector. The normal (default) position is open to enable SCSI termination. See the table on the right for jumper settings.

**LVD CH A SCSI Termination Jumper Settings (JPA2)**

| Jumper Position | Definition |
|---|---|
| Open | Enabled |
| Closed | Disabled |

### SCSI Enable/Disable (5010H only)

Jumper JP34 allows you to enable or disable all onboard SCSI. The normal (default) position is enabled. See the table on the right for jumper settings.

**SCSI Enable/Disable Jumper Settings (JP34)**

| Jumper Position | Definition |
|---|---|
| 1-2 | Enabled |
| 2-3 | Disabled |

## 5-10 Floppy/Hard Disk and SCSI Connections

Be aware of the following when connecting the floppy and hard disk drive cables:

• A red mark on a wire typically designates the location of pin 1.

• A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with the twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

### Floppy Connector

The floppy connector is located on J26 and requires a 34-pin ribbon cable for operation. See the table on the right for pin definitions.

**Floppy Connector Pin Definitions (J26)**

| Pin Number | Function | Pin Number | Function |
|---|---|---|---|
| 1 | GND | 2 | FDHDIN |
| 3 | GND | 4 | Reserved |
| 5 | Key | 6 | FDEDIN |
| 7 | GND | 8 | Index- |
| 9 | GND | 10 | Motor Enable |
| 11 | GND | 12 | Drive Select B- |
| 13 | GND | 14 | Drive Select A- |
| 15 | GND | 16 | Motor Enable |
| 17 | GND | 18 | DIR- |
| 19 | GND | 20 | STEP- |
| 21 | GND | 22 | Write Data- |
| 23 | GND | 24 | Write Gate- |
| 25 | GND | 26 | Track 00- |
| 27 | GND | 28 | Write Protect- |
| 29 | GND | 30 | Read Data- |
| 31 | GND | 32 | Side 1 Select- |
| 33 | GND | 34 | Diskette |

**IDE Connector Pin Definitions (J18, J19)**

| Pin Number | Function | Pin Number | Function |
|---|---|---|---|
| 1 | Reset IDE | 2 | GND |
| 3 | Host Data 7 | 4 | Host Data 8 |
| 5 | Host Data 6 | 6 | Host Data 9 |
| 7 | Host Data 5 | 8 | Host Data 10 |
| 9 | Host Data 4 | 10 | Host Data 11 |
| 11 | Host Data 3 | 12 | Host Data 12 |
| 13 | Host Data 2 | 14 | Host Data 13 |
| 15 | Host Data 1 | 16 | Host Data 14 |
| 17 | Host Data 0 | 18 | Host Data 15 |
| 19 | GND | 20 | Key |
| 21 | DRQ3 | 22 | GND |
| 23 | I/O Write- | 24 | GND |
| 25 | I/O Read- | 26 | GND |
| 27 | IOCHRDY | 28 | BALE |
| 29 | DACK3- | 30 | GND |
| 31 | IRQ14 | 32 | IOCS16- |
| 33 | Addr 1 | 34 | GND |
| 35 | Addr 0 | 36 | Addr 2 |
| 37 | Chip Select 0 | 38 | Chip Select 1- |
| 39 | Activity | 40 | GND |

### IDE Connectors

There are no jumpers to configure the onboard IDE connectors J18 and J19. Refer to the table on the left for pin definitions.

## Ultra160 SCSI Connectors

Refer to the table below for pin definitions for the Ultra160 SCSI connectors located at JA1, JA2 and JA3.

**68-pin Ultra160 SCSI Connectors (JA1, JA2, JA3)**

| Connector Contact Number | Signal Names | Connector Contact Number | Signal Names |
|---|---|---|---|
| 1 | +DB(12) | 35 | -DB(12) |
| 2 | +DB(13) | 36 | -DB(13) |
| 3 | +DB(14) | 37 | -DB(14) |
| 4 | +DB(15) | 38 | -DB(15) |
| 5 | +DB(P1) | 39 | -DB(P1) |
| 6 | +DB(0) | 40 | -DB(0) |
| 7 | +DB(1) | 41 | -DB(1) |
| 8 | +DB(2) | 42 | -DB(2) |
| 9 | +DB(3) | 43 | -DB(3) |
| 10 | +DB(4) | 44 | -DB(4) |
| 11 | +DB(5) | 45 | -DB(5) |
| 12 | +DB(6) | 46 | -DB(6) |
| 13 | +DB(7) | 47 | -DB(7) |
| 14 | +DB(P) | 48 | -DB(P) |
| 15 | GROUND | 49 | GROUND |
| 16 | DIFFSENS | 50 | GROUND |
| 17 | TERMPWR | 51 | TERMPWR |
| 18 | TERMPWR | 52 | TERMPWR |
| 19 | RESERVED | 53 | RESERVED |
| 20 | GROUND | 54 | GROUND |
| 21 | +ATN | 55 | -ATN |
| 22 | GROUND | 56 | GROUND |
| 23 | +BSY | 57 | -BSY |
| 24 | +ACK | 58 | -ACK |
| 25 | +RST | 59 | -RST |
| 26 | +MSG | 60 | -MSG |
| 27 | +SEL | 61 | -SEL |
| 28 | +C/D | 62 | -C/D |
| 29 | +REQ | 63 | -REQ |
| 30 | +I/O | 64 | -I/O |
| 31 | +DB(8) | 65 | -DB(8) |
| 32 | +DB(9) | 66 | -DB(9) |
| 33 | +DB(10) | 67 | -DB(10) |
| 34 | +DB(11) | 68 | -DB(11) |

# Chapter 6

# Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC810 chassis.  For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

### Tools Required
The only tool you will need to install components and perform maintainance is a Philips screwdriver.

## 6-1   Static-Sensitive Devices

Electric Static Discharge (ESD) can damage electronic components.  To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully.  The following measures are generally suffi-cient to protect your equipment from ESD discharge.

### Precautions

● Use a grounded wrist strap designed to prevent static discharge.
● Touch a grounded metal object before removing any board from its anti-static bag.
● Handle a board by its edges only; do not touch its components, periph-eral chips, memory modules or gold contacts.
● When handling chips or modules, avoid touching their pins.
● Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.
● For grounding purposes, make sure your computer chassis provides ex-cellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

### Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static pro-tected.

---

**5010E**

IDE Drives     Slim CD-ROM Drive     Control Panel/
System LEDs

Screws (3 on each side)
Rack Unit Retention     Floppy Drive

System Reset

Main Power

**5010H**     SCSI Drives
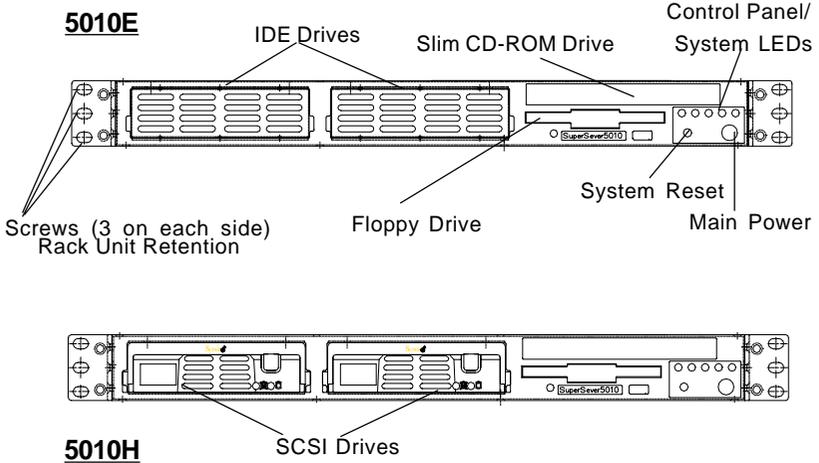
## Figure 6-1.  Chassis Front  Views

PCI Card
Release Latch

**5010E**     PCI Slot

External SCSI Connector

**5010H**
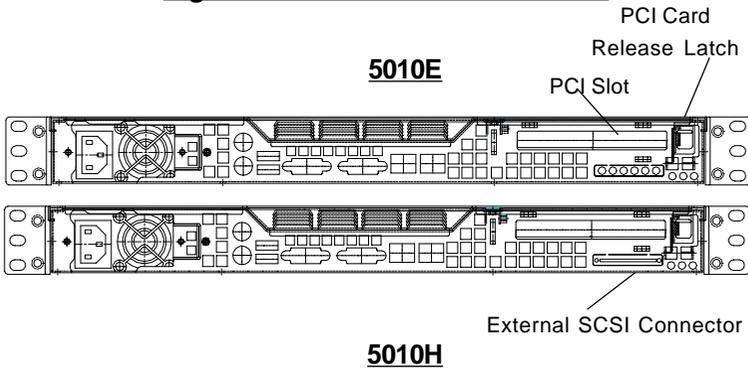
## Figure 6-2.  Chassis  Rear View

## 6-2   Control Panel

The control panel (located on the front of the chassis) must be connected
to the JF1 connector on the motherboard to provide you with system
status indications.  A ribbon cable has bundled these wires together to
simplify the connection.  Connect the cable from JF1 on the motherboard
to JP4 on the Control Panel PCB (printed circuit board).  Make sure the
red wire plugs into pin 1 on both JF1 and JP4.  Pull all excess cabling out
of the airflow path.  The LEDs inform you of system status.  See Chapter
3: System Interface for details on the LEDs and the control panel buttons.
Details on JF1 can be found in the Chapter 5: Advanced Motherboard
Installation.

# 6-3   System Fans

One 10-cm blower fan provides all the cooling needed for the Super-Server 5010H/5010E.  An optional 4-cm fan can also be installed into the chassis cross section just above the ribbon cable to the JA1 SCSI connector on the motherboard.  The chassis includes air seals under the blower fan and at the chassis cross section, which separates the drive bay area from the motherboard area of the chassis to promote better airflow.  It is highly important that the air seal is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis.  See Figure 6-3.

## System Fan Failure

The blower fan runs at a full 100% rpm.  If the fan fails, the ambient air temperature in the chassis will rise and activate the overheat LED on the control panel.  You will need to power down the system to replace this fan.

## Replacing System Cooling Fans

**1.    Removing the blower fan:**
After turning off the power to the system, first remove the chassis cover and unplug the fan cable from the motherboard.  Lift the blower fan from the mounting posts and pull it completely out from the motherboard.  See Figure 6-3.

**2.    Installing a new blower fan:**
Replace the failed fan with an identical 10-cm, 12 volt fan (available from Supermicro).  Position the new fan at its proper place in the chassis, by fitting the fan onto the fan mounting posts in the chassis.  After the new fan has been installed, plug the fan cable back into the same chassis fan header on the motherboard you removed it from.  Make sure the air seal under the fan is properly installed and creating a good seal.  Power up the system and check that the fan is working properly and that the LED on the control panel has turned off.  Finish by replacing the top panel of the chassis.

Fan Mounting Posts

Optional Fan Location

IDE HARD DRIVE

Chassis Cross Section

Blower Fan
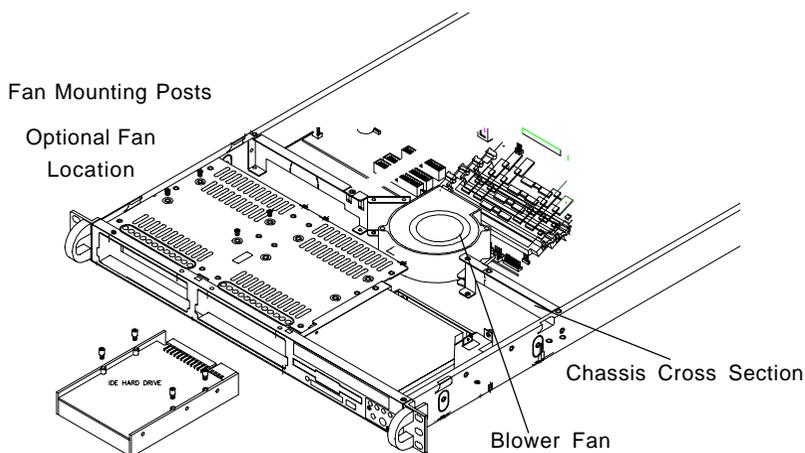
**Figure 6-3.   System Cooling Fans**

## 6-4   Drive Bay Installation/Removal

### Accessing the Drive Bays

SCSI Drives: You do not need to access the inside of the chassis to replace or swap SCSI drives.  Proceed to the next step for instructions. **Note: You must use standard 1" high, 80-pin SCA SCSI drives in the SuperServer 5010H.**

CD-ROM/Floppy Disk Drive: For installing/removing the CD-ROM or floppy disk drive, you will need to gain access to the inside of the 5010H/5010E by removing the top cover of the chassis.  Proceed to the "CD-ROM and Floppy Drive Installation" section later in this chapter for instructions. **Note: Only a "slim" CD-ROM drive will fit in the 5010H/5010E.**

## SCSI Drive Installation (5010H only)

**1.    Mounting a SCSI drive in a drive carrier:**
The SCSI drives are mounted in drive carriers to simplify their installation and removal from the chassis.  These carriers also help promote proper airflow for the SCSI drive bays.  For this reason, even empty carriers without SCSI drives installed must remain in the chassis.  To add a new SCSI drive, install a drive into the carrier with the printed circuit board side toward the carrier so that the mounting holes align with those in the carrier.  Secure the drive to the carrier with four screws, as shown in Figure 6-4.
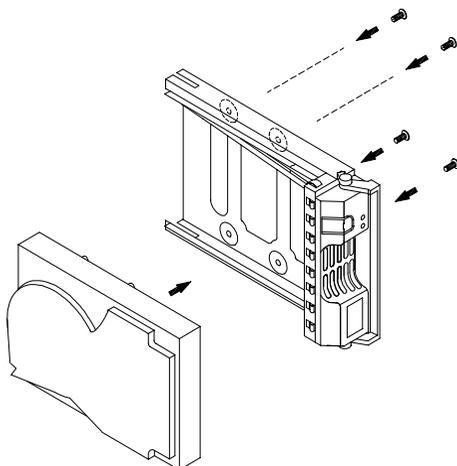


**Figure 6-4.  Mounting a SCSI Drive in a Carrier (5010H only)**

! Use caution when working around the SCSI backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.

! **Important:**  Regardless of how many SCSI hard drives are installed, both SCSI drive carriers must remain in the drive bays for proper airflow.

**2.    Installing/removing hot-swap SCSI drives:**

Two SCSI drive bays are located in the front of the chassis, making them easily accesible for installation and removal.  These SCSI drives are hot-swap units, meaning they can be installed and removed without powering down the system.  To remove, first push the release button located beside the drive LEDs, then swing the burgundy colored handle fully out and use it to pull the unit straight out (see Figure 6-5).





Handle

Release Button
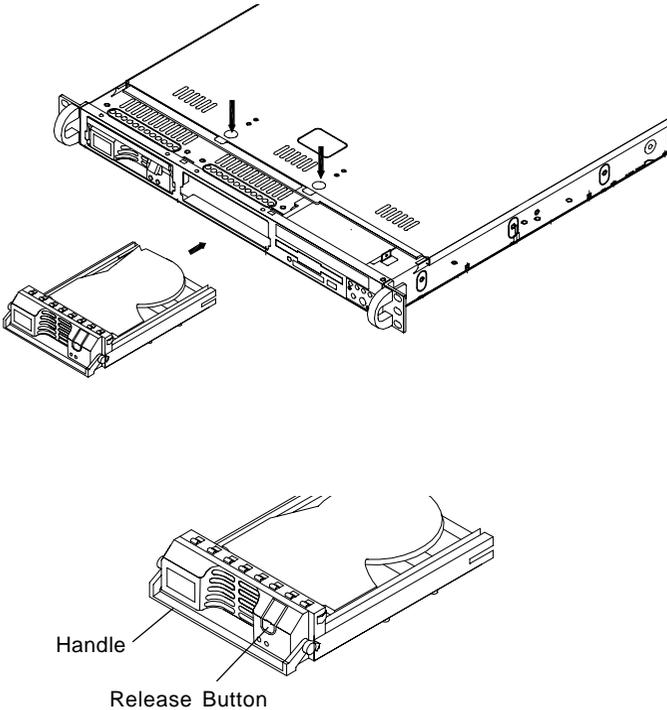
**Figure 6-5.   Removing SCSI Drives (5010H)**

! **Important:**  Regardless of how many SCSI hard drives are installed, both SCSI drive carriers must remain in the drive bays to maintain proper airflow.

**SCSI Power Cables**

SCSI power cables should be routed so that they do not block the airflow through the chassis. There is a 4-pin connector for the power cables.

**SCA Backplane**

The SCSI drives plug into an SCA backplane that provides power, SCSI ID and bus termination. A RAID controller can be used with the SCA backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the SCSI drives. The SCA SCSI backplane is already preconfigured, so there are no jumpers or switches present on it.

## CD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the CD-ROM and floppy drive bays. The CD-ROM drive must have a "slim" profile to fit into the 5010H/5010E.

First, release the retention screws that secure the unit to the rack. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click"). Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. You must power down the system before installing or removing floppy or IDE drives.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays.

• The floppy disk drive cable has seven twisted wires.

• A red mark on a wire typically designates the location of pin 1.

• A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

## 6-5   Power Supply

The SuperServer 5010H/5010E has a single 200 watt power supply.  This power supply has an auto-switching capability, which enables it to automatically sense and operate with either 110 or 220 volt inputs.  A power on/off switch is located at the back of the power supply.  Turning this power switch to the off position will remove both main and standby power from the system.

### Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the power supply unit.  Replacement units can be ordered directly from Supermicro.  See contact infomation in the Preface.

### Replacing the Power Supply

**1.    Accessing the inside of the SuperServer 5010H/5010E:**
To replace a power supply, you must first remove the top chassis cover. To do so, first release the retention screws that secure the unit to the rack.  Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").  Next, depress the two buttons on the top of the chassis to release the top cover and push it away from you.  You can then lift the top cover from the chassis to gain full access to the inside of the server.

**2.    Removing the power supply: (See Figure 6-6)**
First unplug the power cord from the system.  To remove the failed power unit, remove the two screws on the back of the power supply, which secure it to the chassis.  You can then lift the unit straight out of the chassis.  (The power cord should have already been removed.)

**3.    Installing a new power supply:**
Replace the failed unit with another unit of the same wattage.  It is highly recommended to replace it with the exact same power supply.  Carefully insert the new unit into position in the chassis and secure it with the two screws at the rear of the unit.  Before reconnecting the power cord, make sure the power switch on the power supply is in the off position. Then reconnect the power cord, replace the chassis top cover and push the unit back into the rack.  Finish by turning the power switch on the power supply on, and then depress the power button on the front of the system.

# Figure 6-6.  Chassis Rear View

## 5010E



Power Supply

I/O Ports (see Figure 1.1)

## 5010H

PCI Slot



External High Density SCSI Connector(5010H only)
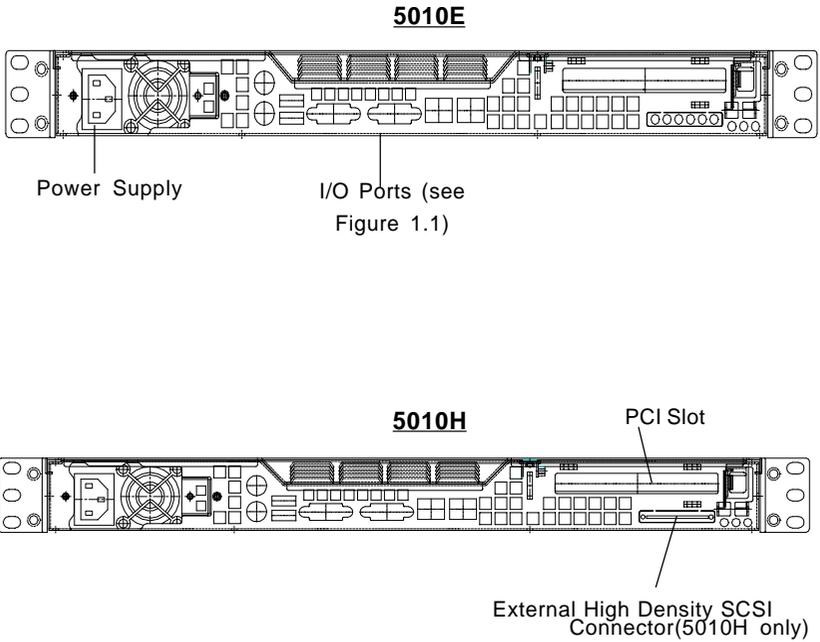
# Notes

# Chapter 4
# BIOS

## 7-1    Introduction

This chapter describes the AMIBIOS for the 5010H/5010E.  The AMI ROM
BIOS is stored in a Flash EEPROM and can be easily upgraded using a
floppy disk-based program.

**Note:** Due to periodic changes to BIOS, some settings may have been
added or deleted and might not yet be recorded in this manual.  Refer to the
Manual Download area of our web site for any changes to BIOS that are
not reflected in this manual.

### System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®,
and PS/2® compatible computers.  The BIOS ROM stores the system param-
eters, such as amount of memory, type of disk drives and video displays,
etc.  BIOS ROM requires very little power. When the computer is turned off,
a back-up battery provides power to the BIOS ROM, enabling it to retain the
system parameters. Each time the computer is powered-on, the computer is
then configured with the values stored in the BIOS ROM by the system
BIOS, which gains control when the computer is powered on.

### How To Change the Configuration Data

The configuration data that determines the system parameters may be
changed by entering the BIOS Setup utility. This Setup utility can be ac-
cessed by pressing <Del> at the appropriate time during system boot.

### Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory
test.  As the memory is being tested, press the <Delete> key to enter the
main menu of the BIOS Setup utility.  From the main menu, you can access
the other setup screens, such as the Chipset and Power menus.  Section 4-
3 gives detailed descriptions of each parameter setting in the Setup utility.

An AMIBIOS identification string is displayed at the left bottom corner of the
screen, below the copyright message.

## 7-2   BIOS Features

- Supports Plug and Play V1.0A and DMI 2.3

- Supports Intel PCI (Peripheral Component Interconnect) (PME) local bus specification

- Supports Advanced Power Management (APM) specification v 1.1

- Supports ACPI

- Supports Flash ROM

AMIBIOS supports the LS120 drive made by Matsushita-Kotobuki Electronics Industries Ltd.  The LS120:

- Can be used as a boot device

- Is accessible as the next available floppy drive

AMIBIOS supports PC Health Monitoring chips.  When a failure occurs in a monitored activity, AMIBIOS can sound an alarm and display a message. The PC Health Monitoring chips monitor:

- CPU temperature

- Additional temperature sensors

- Chassis intrusion detector

- Five positive voltage inputs

- Two negative voltage inputs

- Three fan speed monitor inputs

## 7-3   Running Setup

*Optimal default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the Standard Setup screen.  All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

## The Main BIOS Setup Menu

Press the <Delete> key during the POST (Power On Self Test) to enter the Main Menu of the BIOS Setup Utility. All Main Setup options are described in this section. The Main BIOS Setup screeen is displayed below.

```
                        BIOS SETUP UTILITY
  Main Advanced Chipset PCIPnP Power Boot Security Exit


  AMIBIOS Version  :        07.00xx
  BIOS Build Date  :        xx/xx/xx
  BIOS   ID        :        SSR71020

  Processor Type   :        PentiumIII™
  Processor Speed  :        933MHz

  System Memory    :        255MB



  System Time               [10:10:00]
  System Date               [Thu 08/24/00]  ↔   Select Screen
                                            ↑↓  Select Item
                                            +-  Change Field
                                            Tab Select Field
                                            F1  General Help
                                            F10 Save and Exit
                                            ESC Exit


     V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.
```

Use the Up/Down arrow keys or the <Tab> key to move between the different settings in the above menu.

When the items "System Time", and "System Date" are highlighted, type in the correct time/date in the time field, and then press "Enter". The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format. The time is in also 24-hour format. For example, 5:30 a.m. appears as 05:30:00 and 5:30 p.m. as 17:30:00.

Press the <ESC> key to exit the Main Menu and use the Left/Right arrow keys to enter the the other categories of BIOS settings. The next section is described in detail to illustrate how to navigate through the menus.

**\*Note: Items displayed in gray are preset and cannot be selected.**

## 7-4   Advanced Chipset Setup

Choose Advanced BIOS Setup from the AMIBIOS Setup Utility main menu with the Left/Right arrow keys.   You should see the following display.  Select one of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.

```
                         BIOS SETUP UTILITY
 Main   Advanced  Chipset PCIPnP  Power  Boot  Security  Exit

 Setup Warning                           Configure SuperIO
 Setting items on this screen to incorrect    Chipset Winbond627F
 values may cause the system to
 malfunction!

 > Health Monitor Features
 > SuperIO Configuration
 > IDE Configuration
 > Floppy Configuration
 > Boot Settings Configuration
 > Peripheral Device Configuration
 > Event Log Configuration
 > Processor Configuration

                                         ↔  Select Screen
                                         ↑↓  Select Item
                                         Enter Go to Sub  Screen
                                         F1  General Help
                                         F10 Save and Exit ESC
                                         Exit

        V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.
```

Use the Up/Down arrow keys to select the "Health Monitor Features" line.

When the "Health Monitor Features" line is highlighted, hit "ENTER" to display its items.

### Health Monitor Features

The BIOS continuously monitors the health of your system by measuring certain voltage levels and temperatures.

**CPU Overheat Warning**

This option allows you to **Enable** or Disable a system overheat warning signal, used to notify you in the event of a dangerous rise in heat levels.

**CPU Overheat Warning**

This option allows you to specify the temperature threshold that, when exceeded, will trigger the overheat warning alarm.

The rest of the Health Monitor menu lists various voltages and temperatures as they are currently being measured.  These include CPU current temperature, CPU voltage, the RPMs of the CPU, H/W MonitorIN0  (CPU1), H/W MonitorIN2 (+3.3V), H/W MonitorIN3 (+5V), H/W MonitorIN4 (+12v), H/W MonitorIN5 (-12V), CPU Fan,Chassis Fan 1, Chassis Fan 2, and thermal control fans. The settings are Enabled or **Disabled**.

## Super IO Configuration

After selecting the settings for "Health Monitor Features",use the Up/Down arrow keys to select the "SuperIO Configuration" line.

When the "SuperIO Configuration" line is highlighted, hit "ENTER" to display its menu.

```
                    BIOS SETUP UTILITY
        Advanced

Configure Winbond627t Port(s)and Parallel P

Serial Port1 Address        [3F8]
Serial Port2 Address        [2F8]
  Serial Port2 Mode         [Normal]
Parallel Port Address       [378]
  Parallel Port Mode        [ECP]
  ECP Mode DMA Channel      [3]
Parallel Port IRQ           [7]

Power Loss Control          [Always Off]
Keyboard Wake-up Function   [Space]

                                        ↔   Select Screen
                                        ↑↓  Select Item
                                        +-  Change Option
                                        F1  General Help
                                        F10 Save and
                                        Exit
                                        ESC Exit
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```

The Super IO Configuration includes the following items:

**Serial Port 1 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 1. The settings for this item include Disabled, **3F8/IRQ4**, 3E8/IRQ4 and 2E8/IRQ3. Select the desired setting and then press "Enter".

**Serial Port 2 Address**

This option specifies the base I/O port address and Interrupt Request address of serial port 2. The settings for this item include Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3.

### Serial Port2 Mode

This option specifies Serial Port2 Mode. The settings for this item include **Normal**, IRDA1.6ms, IRDA311.6, ASKIR, ASKIR500, ASKIRDem, ASKIRD500.

## Parallel Port Address

This option specifies the I/O address used by the parallel port. The settings for this item include Disabled, **378**, 278 and 3BC. Select your setting and then press "Enter".

### Parallel Port Mode

This option specifies the parallel port mode. The settings for this item include Normal, Bi-directional, EPP and **ECP**.

#### ECP Mode DMA Channel

This option allows the user to set the setting for the ECP Mode of the DMA Channel. The settings for this item include **0**, 1 and 3.

### Parallel Port IRQ

This option allows the user to set the Parallel Port IRQ. The settings for this item include 5 and **7**.

**Power Loss Control**

This option determines how the system will react when power is reapplied after being lost unexpectedly. The settings are **Always Off** (if the system loses power unexpectedly, the computer system will keep power off until the power button is pressed), Always On (if the system loses power unexpectedly, the computer system will restore power) and Previous (if the system loses power unexpectedly, the computer system restores the system to its previous state before power was lost).

**Keyboard Wake-Up Function**

Use this option to specify which key is to be depressed to wake-up the system from sleep mode. The settings are Disabled, CTRL F1, **Space** and Any Key. Disabled: This setting prevents the computer system from using the keyboard to power it on. Ctrl F1: This setting allows the computer system to be powered on when the CTRL and F1 keys on the keyboard are pressed. **Space**: This setting allows the computer system to be powered on when the Space bar on the keyboard is pressed. This is the default setting. Any Key*:* This setting allows the computer system to be powered on when any keys on the keyboard are pressed.

## IDE Configuration

**Onboard PCI IDE Controller**

This option allows the user to enable or disable the integrated IDE Controller. The settings include Disabled, Primary, Secondary and **Both**. Select "Disabled" to disable the Integrated IDE Controller. Select "Primary" to enable the Primary IDE ontroller only. Select "Secondary" to enable the Secondary IDE Controller only. Select "Both" to enable both Primary and Secondary IDE Controllers.

### Primary IDE Master

When entering "Setup", BIOS automatically detects the presence of IDE devices. This displays the auto detection status of the IDE de vices. You can also manually configure the IDE drives by providing the following information:

### Type

This option sets the type of device that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. The settings include Not installed, **Auto**, CDROM and ARMD. The "Auto" setting allows BIOS to automatically detect the presence of the IDE controller.

### LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB. The settings are Disabled and **Auto**. Select "Disabled" to disable LBA mode. Select "Auto" to enable LBA mode if your device supports it and is not already formatted with the LBA mode.

### Block (Multi-Sector Transfer) Mode

This option sets the block mode multi sector transfers option The settings include Disabled and **Auto**. Disabled: This option prevents the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device will occur one sector at a time. Auto: This option allows the BIOS to auto detect device support for Multi-Sector Transfers on the specified channel. If supported, this option allows the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to memory. The data transfer to and from the device will occur multiple sectors at a time (if the device supports it).

### PIO Mode

IDE PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The settings are: **Auto**, 0, 1, 2, 3 and 4.

### DMA

This item allows the users to select the DMA mode. The settings are: **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MWDMA1, MWDM2, UWDMA0, UWDMA1, UWDMA2, UWDMA3 and UWDMA4. Select Auto to auto de-

tect the DMA Mode.  Select SWDMA0 through SWDMA2 to set single word DMA0 through DMA2.  Select MWDMA0 through MWDMA2 to set Multi-word DMA0 through DMA2. Select UDMA0 trhough UDMA4 to set Ultra DMA0 through Ultra DMA4.

**S.M.A.R.T.**

S.M.A.R.T stands for Self-Monitoring Analysis and Reporting Technology, a feature that can help predict impending drive failures.  The settings are **Auto**, Disabled and Enabled. Select "Enabled" or "Disabled" to enable or disable the S.M.A.R.T.  Select "Auto" to auto detect S.M.A.R.T.

**32Bit Data Transfer**

The settings are Auto, Disabled and **Enabled**. Select "En-abled" or "Disabled" to enable or disable the 32-bit Data Transfer function.  Select "Auto" to auto detect the 32-bit Data Transfer function.

**ARMD Emulation**

This option is used to select the emulation used when config uring an LS120, MO (Magneto-Optical), or Iomega Zip drive. The settings are **Auto**, Floppy and HardDisk.

**Primary IDE Slave**

When the system enters "Setup", BIOS automatically detects the presence of IDE devices.  This option displays the auto detection status of IDE de-vices. The settings for "Primary IDE Slave" are the same as those for the "Primary IDE Master".

**Secondary IDE Master**

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Master" are the same as those for the "Primary IDE Master".

**Secondary IDE Slave**

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Slave" are the same as those for the "Primary IDE Master".

**Hard Disk Write Protect**

This item allows the user to prevent the hard disk from being overwritten. The options are Enabled or **Disabled**. Enabled allows the drive to be used normally; read, write and erase functions can all be performed. Disabled prevents the hard disk from being erased. This function is effective only when the device can be accessed through BIOS.

**ATA(PI) Detect Timeout**

Set this option to stop the system search for ATAPI devices within the specified number of seconds. The options are 0, 5, 10, 15, 20, 25, 30, and **35** (seconds). Most ATA disk drives can be detected within 5 seconds.

**ATA(PI) 80Pin Cable Detection**

This option selects the mechanism for detecting the 80-pin ATA(PI) cable. Options include **Host and Device**, Host, and Device. Host: This option uses the motherboard onboard IDE controller to detect the type of IDE cable used. Device This option uses the IDE disk drive to detect the type of IDE cable used. Host & Device: This option uses both the motherboard onboard IDE controller and IDE disk drive to detect the type of IDE cable used.

## Floppy Configuration

**Floppy A**

Use this option to specify which of floppy drive you have installed in the A drive. The settings are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", **1.44 MB 3 1/2"** and 2.88 MB 3 1/2".

**Floppy B**

Use this option to specify which of floppy drive you have installed in the B drive. The settings are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", **1.44 MB 3 1/2"** and 2.88 MB 3 1/2".

**Floppy Drive Seek**

Use this option to Enable or **Disable** the floppy seek routine on bootup.

## Boot Settings Configuration

**Quick Boot**

This option allows the BIOS to skip certain tests that are normally performed on boot up. You can disable the option to speed up boot time. The settings are **Disabled** and Enabled.

**Quiet Boot**

If Disabled, this option will cause the normal POST messages to be displayed upon setup. When **Enabled**, the OEM logo is displayed instead of the POST messages.

**Add-On ROM Display Mode**

Set this option to display add-on ROM (read-only memory) messages. The settings for this option are **Force BIOS** and Keep Current. Force BIOS allows the computer to force a third party BIOS to display during system boot. Keep Current has the system display AMIBIOS information on bootup.

**BootUp Num Lock**

This option is used to select the status of the Number Lock function on your keyboard on bootup. The settings are **On** and Off.

**BootUp CPU Speed**

This option is used set the CPU speed to either **High** or Low.

**PS/2 Mouse Support**

This option specifies whether a PS/2 Mouse will be supported. Settings are **Enabled** and Disabled.

**Typematic Rate**

Set this option to select the rate at which the computer repeats a key that is held down. Settings are **Fast** and Slow. Fast: This sets the rate the computer repeats a key to over 20 times per second. Under normal operations, this setting should not be changed. Slow: This sets the rate the computer repeats a key to under 8 times per second.

**System Keyboard**

This option is to let the system know if a keyboard is **Present** or Absent.

**Primary Display**

This option specifies the type of monitor display you have installed on the system.  The settings are Absent, **VGA/EGA**, Color 40 x 25, Color 80 x 25 and monochrome.

**Parity Check**

Use this option to either Enable or **Disable** the use of memory parity checking.

**Boot to OS/2**

This option can be used to boot the system to an OS/2 operating system. The settings are **No** and Yes.

**Wait for F1 if Error**

This settings for this option are **Enabled** and Disabled.  Disabled: This prevents the AMIBIOS to wait on an error for user intervention.  This setting should be used if there is a known reason for a BIOS error to appear.  An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached. If this setting is set, the system will continue to bootup in to the operating system. If 'F1' is enabled, the system will wait until the BIOS setup is entered. Enabled: This option allows the system BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem.  This normally happens when upgrading the hardware and not setting the BIOS to recognize it.

**Hit "Delete" Message Displayed**

This option tells the system to display or not display the "Hit Delete to Enter Setup" message.  The settings are **Enabled** and Disabled.

**Internal Cache**

This option is for enabling or disabling  the internal CPU L1 cache. Settings include Disabled, Write-Thru and **Write-Back**.  Disabled: This option prevents the system from using the internal CPU L1 cache.  This setting should

be used to slow the computer system down or to troubleshoot error mes-sages. Write-Thru: This option allows the computer system to use the internal CPU L1 cache as Write-Through cache. Write-Through cache is slower than Write-Back cache. It performs write operations to the internal L1 CPU cache and system memory simultaneously.Write-Back          This option allows the computer system to use the internal CPU L1 cache as Write-Back cache. Write-Back cache is faster than Write-Through cache. Write-Back cache is a caching method in which modifications to data in the cache aren't copied to the cache source until absolutely necessary. Write-back caching is available on all CPUs supported by this BIOS. With these CPUs, write operations stored in the L1 cache aren't copied to main memory until absolutely necessary. This is the default setting.

**External Cache**

This option is for enabling or disabling the internal CPU L2 cache. Settings include Disabled, Write-Thru and **Write-Back**. See description above.

**Peripheral Device Configurations**

This option allows the user to set the configurations for the devices listed below. The options for these devices are: Disabled, **Enabled**.

**Onboard SCSI Option-ROM (5010H only)**

**Onboard LAN1 Option-ROM**

**Onboard LAN2 Option-ROM**

## Event Log Configuration

### Event Logging

This option **Enables** or Disables the logging of events. You can use this screen to select options for the Event Log Configuration Settings. You can access sub screens to view the event log and mark all events as read. Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

### ECC Event Logging

This option Enables or **Disables** the logging of ECC events. The events logged by AMIBIOS are post errors such as a bad BIOS, floppy errors, or hard drive errors.

### Clear All Event Logs

This option can be used to tell the system to clear the event log on the next boot up. The settings are **No** and Yes.

### View Event Log

This option allows the user view the events of the system. The settings are **No** and Yes.

### Mark all Events as Read

This option allows the user to use the screen to mark all events as read. The settings are **OK** and Cancel.

## 7-5   Chipset Setup

Choose Chipset Setup from the AMIBIOS Setup Utility main menu. The screen
is shown below. All Chipset Setup options are described following the
screen.  You can use this screen to select options for the GHCH
Configuration.

```
                       BIOS SETUP UTILITY

 Main    Advanced    Chipset    PCIPnP   Power   Boot   Security   Exit

 > GMCH Configuration                              Options for MCH
 > ICH₂Configuration

 Processor Serial Number         [Disabled]
 CPU Latency Timer               [Disabled]

 C000,16k Shadow                 [Cached/WP]
 C400,16k Shadow                 [Cached/WP]
 C800,16k Shadow                 [Disabled]
 CC00,16k Shadow                 [Disabled]
 D000,16k Shadow                 [Disabled]
 D400,16k Shadow                 [Disabled]     ↔   Select Screen
 D800,16k Shadow                 [Disabled]     ↑↓  Select Item
 DC00,16k Shadow                 [Disabled]     +-  Change Option
                                                F1  General Help
                                                F10 Save and Exit
                                                ESC Exit



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```

### GMCH Configuration

You can use this screen to select options for the GMCH Configuration.  Use
the up and down arrow keys to select an item, and the plus (+) and minus
(-) keys to change the option setting. The settings are described on the
following pages.

**Primary Video Device**

This option specifies the primary display device on your system.  Settings
include Internal, External PCI, External AGP and **Auto**.  Auto: This setting
allows the BIOS to select the primary video device at bootup. Internal: This
setting allows the onboard video display adapter to be the primary video
device at bootup.  External PCI: This setting allows a PCI Display Adapter
card to be the primary video device at bootup.  External AGP: This setting
allows an AGP Display Adapter to be the primary video device at bootup.

**Internal Graphics Mode Select**

This option selects the mode for the internal graphics mode. Settings include Disabled, Enabled; 512 KB and **Enabled; 1 MB**. Enabled; 1MB: This option allows the Internal Graphic controller to allocate 1 MB of system memory for video display use. Enabled; 512KB: This option allows the Internal Graphic controller to allocate 512 KB of system memory for video display use. Disabled: This option allocates no system memory for video display use.

**Display Cache Window Size**

This option sets the size of the display cache window. The settings are **64 MB** and 32 MB.

**Display VBIOS Message:**

This option allows the BIOS to display VBIOS messages. The settings are **Enabled,** or disabled.

**Internal Graphics Scaling**

This option allows the Internal Graphics Scaling to be manually set or automatically set. The settings for this option for this setting include Disabled, Auto and Enabled. Auto: This setting allows the Internal Graphics scaling to auto select itself. This setting sets the Internal Graphics scaling off. Enabled: This setting sets the Internal Graphics scaling on.

**AGP Graphics Aperture Size**

This option allows you to adjust the graphics aperture size to either **64 MB** or 32 MB.

### Init Display Cache Memory

This option allows the Initial Display cache memory to be adjusted. The setting are **Enabled** and Disabled.

#### Paging Mode Control

This option allows the paging mode controls to be adjusted to either **Close** or Open.

#### RAS-to-CAS Latency Override

The RAS-to-CAS Override is adjusted with this option. The settings are **Disabled** and Enabled. Disabled: This option allows RAS-to-CAS. Enabled: This option overrides RAS-to-CAS. SDRAM stores informa tion in blocks of rows and columns. RAS stands for Row Address Strobe. CAS stands for Column Address Strobe.

#### CAS Latency

This option regulates the speed of the Column Address Strobe (CAS) as either Fast or **Slow**, which is higher or lower latency. CAS latency optimizes the speed at which data is accessed in a column by defining CAS latency time in 100 MHz or 133 MHz clocks (dependent on the memory bus speed). It controls the time delay (in clocks) before SDRAM starts a read command after receiving it. Reading RAS data can be read twice as fast as reading CAS. Lowering the latency can increase the speed of the SDRAM, but at the expense of stability.

#### RAS Timing

This option regulates the speed of the Row Address Strobe (RAS) as either Fast or **Slow**. As with CAS Latency, lowering the timing can increase the speed of the SDRAM, but at the expense of stability.

#### RAS Pre-charge

The precharge time is the number of cycles it takes for the RAS to accumulate a charge before a DRAM refresh. Insufficient recharge time may cause the DRAM to lose data. The settings are Fast and **Slow**, which is more stable.

**System Memory Frequency**

This option allows the system memory frequency to be adjusted.  The settings are 100 MHz (for PC100 memory), 133 MHz (for PC133 memory) and **Auto**, which allows the system memory frequency to auto select itself

**SDRAM Refresh**

This option sets the refresh rate for the system memory.  Settings include **Auto**, 15.6 mS, 7.8 mS and 128 CLKS.

**DRAM Cycle Time (SCLKS)**

This option allows you set the DRAM cycle time to 5/7, 6/8 or **Auto**.

**CAS Latency (SCLKS)**

This option allows you to set the CAS latency time to 3, 2 or **Auto**.

**RAS# to CAS# Delay (SCLKS)**

The settings for this option are 3, 2 or **Auto**.

**RAS# Precharge (SCLKS)**

This option sets the RAS# precharge time.  The settings are 3, 2 or **Auto**.

**DRAM Page Closing Policy**

The settings for this option are Close and **Open**.

**Memory Hole**

Some ISA cards may require specific areas of memory to function. This can be done by choosing the 15 MB - 16 MB option to reserve the area.  The settings for this option are **Disabled** and 15 MB-16 MB.

## ICH2 Configuration

You can use this screen to select options for the ICH2 Configuration.  Use the up and down arrow keys to select an item, and the plus (+) and minus (-) keys to change the option setting. The settings are described on the following pages.  ICH stands for I/O Controller Hub, which is a chipset on the motherboard that controls the basic I/O functions, USB ports, audio functions, modem functions, IDE channels, and PCI slots.

**Moon ISA Device Enable**

This option allows a Moon ISA device to be supported.  The settings are **Disabled** and Enabled.  A Moon ISA device is a device that contains an Intel® PCIset S82380AB PCI to ISA in a 160-pin MQFP chipset. This chipset is called an Intel® Moon ISA or Intel® MISA.  This chipset is used to connect ISA devices to computers that do not have a physical ISA slot.  The best example of this is a notebook computer (No ISA Slots) when used with a docking station (contains up to three ISA peripherals).  The docking station would contain the Intel® Moon ISA chipset.

**ICH2 Positive Decode**

This option allows the ICH2 Positive Decode to be set.  The settings are **Disabled** and Enabled.

**CPU Bist Enable**

This option allows the CPU Bist Enable to be set.  The settings are **Disabled** and Enabled.

**ICH2 DCB Enable**

This option allows the ICH2 DCB to be set.  The settings are **Disabled** and Enabled.

**SMBus Controller**

The settings for this option are **Enabled** and Disabled.


**LPC 4Eh-4Fh Decode**

This option allows the LPC 4Eh-4Fh to be set. The settings are Disabled and **Enabled**.

**DMA-0 Type**

**DMA-1 Type**

**DMA-2 Type**

**DMA-3 Type**

**DMA-4 Type**

**DMA-5 Type**

**DMA-6 Type**

**DMA-7 Type**

This above options allow you to change the protocol for DMA-0 through DMA-7. The settings for all are PC/PCI and **LPC DMA**.

### Processor Serial Number

Intel includes a serial number in their processors to act as a unique system identifier. For privacy reasons, you can disable the release of this identifier. The settings for this option are **Disabled** and Enabled.  Disabled: This setting restricts all access to the CPU serial number from your CPU. Enabled: This setting allows the operating system and applications to be able to read the CPU serial number from your CPUs.   **Note:** If the CPU is a Intel® Celeron Processor, then this selection will be grayed out.  Intel® Celeron Processors do not contain a processor serial number.

### CPU Latency Timer

This option allows the CPU Latency Timer to be modified. The settings for this option are **Disabled** and Enabled.  Disabled: The deferrable processor cycle will be deferred immediately after receiving another ADS#.  Enabled: The deferrable processor cycle will only be deferred after it has been in a "Snoop Stall" for 31 clocks and another ADS# has arrived.

**C000, 16k Shadow**

**C400, 16k Shadow**

**C800, 16k Shadow**

**CC00, 16k Shadow**

**D000, 16k Shadow**

**D400, 16k Shadow**

**D800, 16k Shadow**

**DC00, 16k Shadow**

These options specify how the 16 KB of video ROM at each of the above addresses is treated. The settings are Disabled, Enabled, and Cached/WP . When Disabled, the contents of the video ROM are not copied to RAM. When Enabled, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM for faster application. When set to Cached/WP, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM and can be written to or read from cache memory. The settings for this option are Disabled, Enabled and Cached/WP. (The optimal settings are Cached/WP for C000 and C400 and Disabled for all the other settings.

## 7-6   PCI PnP Setup

Choose PCI/PnP Setup from the AMIBIOS Setup main menu. All PCI/PnP options are described in this section. The PCI/PnP Setup screen is shown below.

```
                         BIOS SETUP UTILITY
 Main   Advanced  Chipset  PCIPnP   Power  Boot  Security  Exit

                                        No: lets the BIOS
                                        configure all the
 Plug & Play O/S              [No]      devices in the system.
 Reset Config Data            [No]      Yes: lets the
 PCI Latency Timer            [64]      operating system
 Allocate IRQ to VGA          [Yes]     configure Plug and
 Palette Snooping             [Disabled] Play (PnP) devices not
 PCI IDE BusMaster            [Disabled] required for boot if
 OffBoard PCI/ISA IDE Card    [Auto]    your system has a Plug
 OffBoard PCI IDE Primary     [Disabled] and Play operating
 IRQ                                    system.
 OffBoard PCI IDE Secondary   [Disabled]
 IRQ

 USB Controller              [Enabled]  ↔   Select Screen
 Legacy USB Support          [Disabled] ↑↓  Select Item
                                        +-  Change Option
 PCI Slot1 IRQ Preference    [Available] F1  General Help
 PCI Slot2 IRQ Preference    [Available] F10 Save and Exit
 PCI Slot3 IRQ Preference    [Available] ESC Exit
 PCI Slot4 IRQ Preference    [Available]



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```

**Plug & Play OS**

Choose the **No** setting for computers that do not meet the Plug and Play specifications, which will allow the BIOS to configure all the devices in the system. Choosing the Yes setting lets the operating system configure PnP devices that are not required for boot up (if the system has a PnP operating system). The operating system would have the ability to change interrupt, I/O, and DMA settings. Normally, this option is set to "Disabled".

**Reset Configuration Data**

Choosing the Yes setting will cause the PnP configuration data in the BIOS to be cleared on the next boot up. Choosing the **No** setting does not force PnP data to be cleared on the next boot.

### PCI Latency Timer

This option specifies the latency timing of the PCI clocks for all PCI devices. Settings include 32, **64**, 96, 128, 160, 192, 224 and 248 PCI clocks.

### Allocate IRQ to PCI VGA

This option lets you allocate an interrupt request (IRQ) to the PCI VGA adapter card (if used).  The settings are **Yes** and No.

### Palette Snooping

When enabled, this option informs PCI devices that an ISA graphics device is installed.  The settings are **Disabled** and Enabled.  This does not necessarily indicate a physical ISA adapter card.  The graphics chipset can be mounted on a PCI card.  Always check with your adapter card manuals first, before modifying the default settings in the BIOS.

### PCI IDE BusMaster

The settings for this option are **Disabled** and Enabled.  This option is only available on non-Microsoft Operating Systems.

### OffBoard PCI/ISA IDE Card

This option specifies which PCI slot has an IDE controller card installed. Settings are **Auto**, PCI slot 1, PCI slot 2, PCI slot 3, PCI slot 4, PCI slot 5 and PCI slot 6.  (PCI slot numbers will be available in this option even if your motherboard does not have that slot number.  If your motherboard does not have a PCI slot 5, for example, do not set this option to "PCI slot5".)

### OffBoard PCI Primary IRQ

This option specifies the primary IRQ for the PCI. Settings include **Disabled**, INTA (Interrupt A), INTB, INTC, INTD and Hardwired.  Hardwired tells the BIOS that the OffBoard IDE Primary controller is a legacy device and the interrupt request channels cannot participate in PCI "Swizzle".  (PCI "Swizzle" is a term used to describe IRQ sharing.)

### USB Function

The settings for this option are Disabled and **Enabled**.  Disabled prevents the use of the USB ports and Enabled allows the use of the USB ports.

**Legacy USB Support**

This option allows Legacy USB support. The settings are **Disabled**, Enabled and Auto. Disabled prevents the use of any USB device in DOS or during system boot. Enabled allows the use of USB devices during boot and while using DOS. The Auto setting auto detects USB keyboards or mice and if found, allows them to be utilized during boot and while using DOS.

**PCI Slot1 IRQ Preferrence**

**PCI Slot2 IRQ Preferrence**

**PCI Slot3 IRQ Preferrence**

**PCI Slot4 IRQ Preferrence**

The settings for the above options are **Auto**, 3, 4, 5 ,7, 9, 10, 11, 12, 14, 15.

**IRQ 3**

**IRQ 4**

**IRQ 5**

**IRQ 7**

**IRQ 9**

**IRQ 10**

**IRQ 11**

**IRQ 14**

**IRQ 15**

The settings for the above options are **Available** and Reserved. Available allows the specified IRQ to be available for use by PCI/PnP devices. Reserved means the specified IRQ is reserved for use by Legacy ISA devices.

**DMA Channel 0**

**DMA Channel 1**

**DMA Channel 3**

**DMA Channel 5**

**DMA Channel 6**

**DMA Channel 7**

Each of the above list of DMA channel setting options can be set to **Available** and Reserved.  Available means the specified DMA channel is available for use by PCI/PnP devices.  Reserved means the specified DMA channel is reserved for use by Legacy ISA devices.

**Reserved Memory Size**

This option specifies the size of a memory area to be reserved for Legacy ISA adapter cards.  The settings are **Disabled**, 16k, 32k and 64k.

## 7-7   Power Setup

Choose Power Setup from the AMIBIOS Setup main menu.  All Power Setup options are described in this section.  The Power Setup screen is shown below.

```
                            BIOS SETUP UTILITY

 Main    Advanced    Chipset    PCIPnP    Power   Boot   Security    Exit

 ACPI Aware O/S                      [No]
 Suspend to RAM Support              [Disabled]
 Repost Video on S3 Resume           [Yes]


 Power Management/APM                [Enabled]
 Standby Time Out                    [Disabled]
 Suspend Power Saving                [S1]
 Suspend Time Out                    [Disabled]
 Power Button Mode                   [On/Off]
 AfterG3 Enable                      [Disabled]
 Green PC Monitor Power State        [Suspend]        ↔   Select Screen
 Video Power Down Mode               [Suspend]        ↑↓  Select Item
 Hard Disk Power Down Mode           [Suspend]        +-  Change Option
 Hard Disk Time Out (Minute)         [Disabled]       F1  General Help
 Display Activity                    [Ignore]         F10 Save and Exit
 Manual Throttle Ratio               [50%]            ESC Exit
 THRM throttle Ratio                 [50%]
 Intruder Sel                        [SMI]

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```

**ACPI Aware O/S**

This option allows the system to utilize Intel's ACPI (Advanced Configuration and Power Interface) specification. Settings are No and **Yes**. DOS®, Windows 3.x®, Windows 95 and Windows NT® are examples of non-ACPI aware operating systems. Windows 98®, Windows ME, and Windows 2000® are examples of ACPI aware operating systems.

**Suspend to RAM Support**

This allows you to enable or disable the Suspend to RAM feature. Settings are **Disabled** and Enabled. The Disabled setting prevents the system from saving information to main memory when in a low power state. Enabled causes the system to enter a low power state instead of being completely shut off. This allows the computer system to bootup in a few seconds. Suspend to RAM (STR) is a technology that is closely associated with the S3 state of the ACPI (Advanced Configuration and Power Interface) specification. STR allows a properly configured system to go into a low power state while saving information to main memory about the system's configuration, open applications, and active files. While in the low power (STR) state, memory remains powered to retain the system information while most other components turn off to conserve energy. Fans are turned off to provide silent operation and to minimize power consumption. Properly configured systems in STR typically can consume less than 5 watts.

**Repost Video on S3 Resume**

This option determines whether or not to invoke the VGA BIOS post test when resuming from STR or the S3 state. Settings are No and **Yes**. (Used with ACPI only.)

**Power Management /APM**

This option allows you to select using APM (Advanced Power Management). The settings are Disabled and **Enabled**.

**Standby Time Out**

This option specifies the length of system inactivity time that should expire before the computer enters a standby power state. The settings are **Disabled**, 1Min, 5Min and 10Min.

### Suspend Power Saving Type

The settings for this option are C2 and S1. The C2 setting allows the CPU (microprocessor) to be put in a low power state. In this state, incoming interrupts wake-up the CPU (microprocessor) to process them (I/O APIC). S1 allows the system to enter the S1 POS (Power On Suspend) state. While the system is in this state, the CPU is not executing instructions, all power resources that supply system level reference of S0 are off, system memory context is maintained, devices that reference power resources that are on are on, and devices that can wake-up the system can cause the CPU to continue to execute from where it left off.

### Suspend Time Out

This option specifies the length of system inactivity while in the standby state that should expire before the computer enters a suspend power state. The settings are **Disabled**, 1Min, 5Min and 10Min.

### Power Button Mode

This option specifies how the external power button on the computer chassis functions. When set to **On/Off**, depressing the power button turns the computer on or off. When set to Suspend, depressing the power button places the computer in Suspend mode or Full On power mode. The Standby setting places the computer in Standby or Full On mode.

### After G3 Enable

This option allows AfterG3 Enable support. The settings are **Disabled** and Enabled. Disabled prevents the system to power on after power is applied to the system. Enabled allows the system to power on after power is applied to the system. This means that if an ATX compliant power supply is turned hard off or unplugged from the wall (power socket supplying it power), the computer system will not power back on immediately after the power cord is reattached or the hard off switch is flipped back on. The power button on the front of the chassis is usually the soft off, meaning that there is still power being supplied to the motherboard even though the system looks completely off. Hard off means that there is not power being supplied to the system at all. The only power is coming from the backup battery on the motherboard.

**Green PC Monitor Power State**

This option specifies the power state that a green PC-compliant monitor enters when BIOS places it in a power saving state after the specified period of display inactivity has expired. The settings include Standby, **Suspend** and Off.

**Video Power Down Mode**

This option specifies the power state that the VGA video subsystem enters after the specified period of display inactivity has expired. The settings include Disabled, Standby and **Suspend**.

**Hard Disk Power Down Mode**

This option specifies the power conserving state that the hard disk drive(s) enters after the specified period of inactivity has expired. The settings include Disabled, Standby and **Suspend**.

**Hard Disk Time Out (Minutes)**

This option specifies the length of hard disk inactivity time that should expire before entering the power conserving state specified in the previous setting. The settings include **Disabled** and increments of 1-15 minutes.

**Display Activity**

This option specifies if BIOS is to monitor for display activity when in a power saving state. The **Ignore** setting means any display activity will not wake the system up from a power management state. The Monitor setting allows display activity to wake up the system from a power management state.

**Manual Throttle Ratio**

When in a power management state, throttling can be used to lower power consumption and reduce heat. This option allows the CPU to operate at a reduced average power, which includes a sacrifice in performance. The settings include 87.5%, 75.0%, 62.5%, **50%**, 37.5%, 25% and 12.5%. (A setting of 75.0% means the BIOS will throttle back the CPU clock to operate 75% of the time.)

**THRM Throttle Ratio**

THRM throttling is used to lower power consumption and reduce heat. The settings include 87.5%, 75.0%, 62.5%, **50%**, 37.5%, 25% and 12.5%.

**Intruder Sel**

This option allows you to set the Intruder SEL setting to SCI or **SMI**. SCI stands for System Control Interrupt. This is considered to be ACPI (Advanced Configuration and Power Interface) mode. The operating system uses the SCI interrupt to process ACPI (Advanced Configuration and Power Interface) events signaled by GPEs (general Purpose Event), whether the system is asleep or awake when the event occurs. In other words, the wake event has the side effect of causing the system to wake up if it is asleep, but its primary purpose is to generate an SCI that notifies the operating system that the event has occurred. SMI stands for System Management Interrupt. This is considered to be Legacy mode. It is used to log interrupt events to operating systems that do not support ACPI (Advanced Configuration and Power Interface) and operating systems that do.

**Timer Overflow Enable**

This allows the system to generate a System Management Interrupt after a specific amount of time has passed. The settings for this option are **Disabled** and Enabled.

**Thermal SMI Enable**

This allows the system to generate a System Management Interrupt after a specific temperature has been exceeded. The settings for this option are **Disabled** and Enabled.

**PME SMI Enable**

This allows the system to generate a System Management Interrupt after a Power Management event has ocurred. The settings for this option are **Disabled** and Enabled.

**SW SMI Timer Enable**

The settings for this option are **Disabled** and Enabled.

### TCO Logic SMI Enable

This allows the system to generate a System Management Interrupt when a century rollover occurs.  The settings for this option **Disabled** and Enabled.

### RTC Resume

This allows you to direct the system to resume operation at a predetermined time by using the real-time clock.  The settings for this option **Disabled** and Enabled.

### RTC Alarm Date

This allows you to input the date you want the system to resume operation according to a real-time clock wake-up.  Input a number from 1 to 31 to indicate the day of the month.

### RTC Alarm Time

This allows you to input the time you want the system to resume operation according to a real-time clock wake-up.  Input the hour and minutes as desired.

### AC97 Logic Resume (370SSA/370SSM)

This allows you to wake up the system from an AC97 modem.  The settings for this option **Disabled** and Enabled.

### USB Controller Resume

This allows you to wake up the system from a USB device.  The settings for this option **Disabled** and Enabled.

### PME Resume

This allows you to wake up the system from a PME device. The settings for this option **Disabled** and Enabled.

### RI Resume

The settings for this option **Disabled** and Enabled.

**SMBUS Resume**

This allows you to wake up the system from a System Management Bus device.  The settings for this option **Disabled** and Enabled.

**LAN Wake-Up**

This allows you to wake up LAN1 and LAN2 from a System Management Bus device.  The settings for this option **Disabled** and Enabled.

# 7-8  Boot Setup

Choose Boot Setup from the AMIBIOS Setup main menu.  All Boot Setup options are described in this section.  The Boot Setup screen is shown below.

```
                        BIOS SETUP UTILITY

Main    Advanced    Chipset    PCIPnP    Power    Boot    Security    Exit

 >    Boot Device Priority
 >    Hard Disk Drives
 >    Removable Devices
 >    ATAPI CDROM Drives

                                              ↔       Select Screen
                                              ↑↓      Select Item
                                              Enter   Go to Sub Screen
                                              F1      General Help
                                              F10     Save and Exit
                                              ESC     Exit

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```

### Boot Device Priority

**1st Boot Device**

AMI BIOS automatically detects hardware devices of the system. This option allows the BIOS to specify the order of boot sequence  that is auto - detected by the BIOS. The settings for the 1st Boot Device are **Removeable Device**, Hard Drive, ATAPI CDROM, Onboard LAN1 option, and Onboard LAN2 option.

**2nd Boot Device**

The settings for the 2nd Boot Device are Removeable Device, **Hard Drive**, ATAPI CDROM, Onboard LAN1Option and Onboard LAN2 Option.

**3rd Boot Device**

The settings for the 3rd Boot Device are Removeable Device, Hard Drive, **ATAPI CDROM,** Onboard LAN1Option and Onboard LAN2 Option.

### Hard Disk Drives

Use this screen to view the hard drives that have been auto-detected or entered manually on your system.

### Removeable Devices

Use this screen to view the removeable devices that have been auto-detected or entered manually on your system.

### ATAPI CDROM Drives

Use this screen to view the ATAPI CDROM drives that have been auto-detected or entered manually on your system.

## 7-9   Security Setup

Choose Security Setup from the AMIBIOS Setup main menu.  All Security Setup options are described in this section.  The Security Setup screen is shown below.

```
┌─────────────────────────────────────────────────────────────────────┐
│                        BIOS SETUP UTILITY                           │
├─────────────────────────────────────────────────────────────────────┤
│ Main    Advanced    Chipset    PCIPnP   Power   Boot  Security  Exit │
├──────────────────────────────────────────┬──────────────────────────┤
│                                           │ Install or Change the    │
│ Supervisor Password   :        Not Installed │ password.             │
│ User Password         :        Not Installed │                       │
│                                           │                          │
│ >  Change Supervisor Password             │                          │
│ >  Change User Password                   │                          │
│ >  Clear User Password                    │                          │
│ Boot Sector Virus Protection    [Disabled] │                         │
│                                           │                          │
│                                           │                          │
│                                           │ ↔     Select Screen      │
│                                           │ ↑↓    Select Item        │
│                                           │ Enter Go to Sub Screen   │
│                                           │ F1    General Help       │
│                                           │ F10   Save and Exit      │
│                                           │ ESC   Exit               │
│                                           │                          │
├─────────────────────────────────────────────────────────────────────┤
│      V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.        │
└─────────────────────────────────────────────────────────────────────┘
```

### Supervisor Password

### User Password

AMIBIOS provides both Supervisor and User password functions. If you use both passwords, the Supervisor password must be set first. The system can be configured so that all users must enter a password every time the system boots or when AMIBIOS Setup is executed, using either or both the Supervisor password or User password. The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a 1 – 6 character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must clear CMOS and reconfigure. **Remember your Password!**  Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in CMOS.

### Change Supervisor Password

This option allows you to change a supervisor password that was entered previously.

### Change User Password

This option allows you to change a user password that was entered previously.

### Clear User Password

Use this option to clear the user password so that it is not required to be entered when the system boots up.

### Boot Sector Virus Protection

This option allows you to enable or disable a virus detection program to protect the boot sector of your hard disk drive. The settings for this option **Disabled** and Enabled. If Enabled, AMIBIOS will display a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive.

## 7-10  Exit  Setup

Choose Exit Setup from the AMIBIOS Setup main menu.  All Exit Setup options are described in this section.  The Exit Setup screen is shown below.

```
┌─────────────────────────────────────────────────────────────────────┐
│                        BIOS SETUP UTILITY                           │
├─────────────────────────────────────────────────────────────────────┤
│ Main    Advanced   Chipset   PCIPnP  Power  Boot  Security   Exit   │
├──────────────────────────────────────────┬──────────────────────────┤
│                                           │ Exit system setup with   │
│ >   Exit Saving Changes                   │ saving the changes.      │
│ >   Exit Discarding Changes               │                          │
│ >   Load Optimal Defaults                 │                          │
│ >   Load Fail-Safe Defaults               │                          │
│ >   Discard Changes                       │                          │
│                                           │                          │
│                                           │                          │
│                                           │                          │
│                                           │ ↔      Select Screen     │
│                                           │ ↑↓     Select Item       │
│                                           │ Enter  Go to Sub Screen  │
│                                           │ F1     General Help      │
│                                           │ F10    Save and Exit     │
│                                           │ ESC    Exit              │
│                                           │                          │
├───────────────────────────────────────────┴─────────────────────────┤
│       V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.      │
└─────────────────────────────────────────────────────────────────────┘
```

### Exit Saving Changes

Highlighting this setting and then pressing <Enter> will save any changes you made in the BIOS Setup program and then exit.  Your system should then continue with the boot up procedure.

### Exit Discarding Changes

Highlighting this setting and then pressing <Enter> will ignore any changes you made in the BIOS Setup program and then exit.  Your system should then continue with the boot up procedure.

### Load Optimal Defaults

Highlighting this setting and then pressing <Enter> provides the optimum performance settings for all devices and system features.

### Load Failsafe Defaults

Highlighting this setting and then pressing <Enter> provides the safest set of parameters for the system.  Use them if the system is behaving erratically.

### Discard Changes

Highlighting this setting and then pressing <Enter> will ignore any changes you made in the BIOS Setup program but will not exit the BIOS Setup program.

# Notes

# Appendix A

# BIOS Error Beep Codes & Messages

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

**Non-fatal errors** are those which, in most cases, allow the system to continue the boot-up process.  The error messages normally appear on the screen.

**Fatal errors** are those which will not allow the system to continue the boot-up procedure.  If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps.  The numbers on the fatal error list, on the following page, correspond to the number of beeps for the corresponding error.  All errors listed, with the exception of Beep Code 8, are fatal errors.

# AMI BIOS Error Beep Codes

| Beep Code | Error Message | Description |
|---|---|---|
| 1 beep | Refresh | *The memory refresh circuitry on the motherboard is faulty* |
| 2 beeps | BIOS ROM file absent | *The BIOS was unable to find the specific file name required to flash the BIOS* |
| 3 beeps | Base 64KB memory failure | *Memory failure occurred in the first 64KB of Memory* |
| 4 beeps | Flash program successful | *The flash was properly programmed with the BIOS ROM file.* |
| 5 beeps | Media read error | *The floppy or ATAPI media is not presented or cannot be read* |
| 6 beeps | Keyboard controller Gate A20 failure | *The keyboard controller may be bad. The BIOS cannot switch to protected mode.* |
| 7 beeps | Processor exception interrupt error | *The CPU generated an exception interrupt* |
| 8 beeps | Display memory read/write error | *The system video adapter is either missing or its memory is faulty. This is not a fatal error.* |
| 10 beeps | Flash erase error | *The flash device was unable to be properly programmed.* |
| 11 beeps | Flash program error | *The flash device was unable to be properly programmed.* |
| 12 beeps | BIOS ROM file incorrect size | *The BIOS ROM file found does not match the size of the flash device* |
| 13 beeps | BIOS ROM image mismatch | *The BIOS ROM file layout configuration does not match image present in the flash device.* |
| 5 short +_1 long beeps | Memory Error | *No memory detected in the system* |
| 6 short + 1 long beeps | Memory Error | *EDO memory detected in system* |
| 7 short + 1 long beeps | SMBUS Error | *SMBUS error* |

# Appendix B
# AMIBIOS POST Checkpoint Codes

When AMIBIOS performs the Power On Self Test, it writes diagnostic codes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, diagnostic equipment can be attached to the computer to read I/O port 0080h.

## B-1 Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution:

| Checkpoint | Code Description |
| --- | --- |
| D0h | The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified. |
| D1h | Initializing the DMA controller, performing the keyboard controller BAT test, starting memory refresh, and entering 4 GB flat mode next. |
| D3h | Starting memory sizing next. |
| D4h | Returning to real mode. Executing any OEM patches and setting the Stack next. |
| D5h | Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0. |
| D6h | Control is in segment 0. Next, checking if <Ctrl> <Home> was pressed and verifying the system BIOS checksum. If either <Ctrl> <Home> was pressed or the system BIOS checksum is bad, next will go to checkpoint code E0h. Otherwise, going to checkpoint code D7h. |

## B-2 Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution:

**Checkpoint        Code  Description**

E0h        The onboard floppy controller if available is initialized. Next,
           beginning the base 512 KB memory test.
E1h        Initializing the interrupt vector table next.
E2h        Initializing the DMA and Interrupt controllers next.
E6h        Enabling the floppy drive controller and Timer IRQs. Enabling internal cache
           memory.
Edh        Initializing the floppy drive.
Eeh        Looking for a floppy diskette in drive A:. Reading the first sector of the
           diskette.
Efh        A read error occurred while reading the floppy drive in drive A:.
F0h        Next, searching for the AMIBOOT.ROM file in the root directory.
F1h        The AMIBOOT.ROM file is not in the root directory.
F2h        Next, reading and analyzing the floppy diskette FAT to find the clusters
           occupied by the AMIBOOT.ROM file.
F3h        Next, reading the AMIBOOT.ROM file, cluster by cluster.
F4h        The AMIBOOT.ROM file is not the correct size.
F5h        Next, disabling internal cache memory.
FBh        Next, detecting the type of flash ROM.
FCh        Next, erasing the flash ROM.
FDh        Next, programming the flash ROM.
FFh        Flash ROM programming was successful. Next, restarting the system
           BIOS.

## B-3 Uncompressed Initialization Codes

The following runtime checkpoint codes are listed in order of execution.
These codes are uncompressed in F0000h shadow RAM.

**Checkpoint       Code Description**

03h       The NMI is disabled. Next, checking for a soft reset or a power on
          condition.
05h       The BIOS stack has been built. Next, disabling cache memory.
06h       Uncompressing the POST code next.
07h       Next, initializing the CPU and the CPU data area.
08h       The CMOS checksum calculation is done next.
0Ah       The CMOS checksum calculation is done. Initializing the CMOS status
          register for date and time next.
0Bh       The CMOS status register is initialized. Next, performing any required
          initialization before the keyboard BAT command is issued.
0Ch       The keyboard controller input buffer is free. Next, issuing the BAT
          command to the keyboard controller.
0Eh       The keyboard controller BAT command result has been verified. Next,
          performing any necessary initialization after the keyboard controller BAT
          command test.
0Fh       The initialization after the keyboard controller BAT command test is done.
          The keyboard command byte is written next.
10h       The keyboard controller command byte is written. Next, issuing the Pin 23
          and 24 blocking and unblocking command.
11h       Next, checking if <End or <Ins> keys were pressed during power on.
          Initializing CMOS RAM if the *Initialize CMOS RAM in every boot*
          AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12h       Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2.
13h       The video display has been disabled. Port B has been initialized. Next,
          initializing the chipset.
14h       The 8254 timer test will begin next.
19h       The 8254 timer test is over. Starting the memory refresh test next.
1Ah       The memory refresh line is toggling. Checking the 15 second on/off time
          next.
2Bh       Passing control to the video ROM to perform any required configuration
          before the video ROM test.
2Ch       All necessary processing before passing control to the video ROM is done.
          Looking for the video ROM next and passing control to it.
2Dh       The video ROM has returned control to BIOS POST. Performing any
          required processing after the video ROM had control.
23h       Reading the 8042 input port and disabling the MEGAKEY Green
          PC feature next. Making the BIOS code segment writeable and
          performing any necessary configuration before initializing the
          interrupt  vectors.
24h       The configuration required before interrupt vector initialization
          has completed. Interrupt vector initialization is about to begin.

**Checkpoint      Code  Description**

25h       Interrupt vector initialization is done. Clearing the password if the
          POST DIAG switch is on.
27h       Any initialization before setting video mode will be done next.
28h       Initialization before setting the video mode is complete. Configuring
          the monochrome mode and color mode settings next.
2Ah       Bus initialization system, static, output devices will be done next, if
          present. See the last page for additional information.
2Eh       Completed post-video ROM test processing. If the EGA/VGA
          controller is not found, performing the display memory read/write
          test next.
2Fh       The EGA/VGA controller was not found. The display memory read/write
          test is about to begin.
30h       The display memory read/write test passed. Look for retrace checking
          next.
31h       The display memory read/write test or retrace checking failed. Performing
          the alternate display memory read/write test next.
32h       The alternate display memory read/write test passed. Looking for alternate
          display retrace checking next.
34h       Video display checking is over. Setting the display mode next.
37h       The display mode is set. Displaying the power on message next.
38h       Initializing the bus input, IPL, general devices next, if present. See the last
          page of this chapter  for additional information.
39h       Displaying bus initialization error messages. See the last page of this
          chapter for additional information.
3Ah       The new cursor position has been read and saved. Displaying the *Hit
          <DEL>* message next.
3Bh       The *Hit <DEL>* message is displayed. The protected mode memory test is
          about to start.
40h       Preparing the descriptor tables next.
42h       The descriptor tables are prepared. Entering protected mode for the
          memory test next.
43h       Entered protected mode. Enabling interrupts for diagnostics mode next.
44h       Interrupts enabled if the diagnostics switch is on. Initializing data to check
          memory wraparound at 0:0 next.
45h       Data initialized. Checking for memory wraparound at 0:0 and finding the
          total system memory size next.
46h       The memory wraparound test is done. Memory size calculation has been
          done. Writing patterns to test memory next.
47h       The memory pattern has been written to extended memory. Writing patterns
          to the base 640 KB memory next.
48h       Patterns written in base memory. Determining the amount of memory below
          1 MB next.
49h       The amount of memory below 1 MB has been found and verified.
          Determining the amount of memory above 1 MB memory next.

**Checkpoint        Code  Description**
4Bh        The amount of memory above 1 MB has been found and verified. Checking
           for a soft reset and clearing the memory below 1 MB for the
           soft reset next. If this is a power on situation, going to checkpoint 4Eh next.
4Ch        The memory below 1 MB has been cleared via a soft reset. Clearing
           the memory above 1 MB next.
4Dh        The memory above 1 MB has been cleared via a soft reset. Saving the
           memory size next. Going to checkpoint 52h next.
4Eh        The memory test started, but not as the result of a soft reset.
           Displaying  the first 64 KB memory size next.
4Fh        The memory size display has started. The display is updated during
           the memory test. Performing the sequential and random memory test
           next.
50h        The memory below 1 MB has been tested and initialized. Adjusting
           the displayed memory size for relocation and shadowing next.
51h        The memory size display was adjusted for relocation and shadowing.
           Testing the memory above 1 MB next.
52h        The memory above 1 MB has been tested and initialized. Saving
           the memory size information next.
53h        The memory size information and the CPU registers are saved.
           Entering real mode next.
54h        Shutdown was successful. The CPU is in real mode. Disabling the
           Gate A20 line, parity, and the NMI next.
57h        The A20 address line, parity, and the NMI are disabled. Adjusting
           the memory size depending on relocation and shadowing next.
58h        The memory size was adjusted for relocation and shadowing.
           Clearing the *Hit <DEL>* message next.
59h        The *Hit <DEL>* message is cleared. The *<WAIT...>* message is
           displayed. Starting the DMA and interrupt controller test next.

**Checkpoint    Code  Description**

60h        The DMA page register test passed. Performing the DMA Controller 1 base register test next.

62h        The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next.

65h        The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.

66h        Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next.

67h        Completed 8259 interrupt controller initialization.

7Fh        Extended NMI source enabling is in progress.

80h        The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.

81h        A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.

82h        The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.

83h        The command byte was written and global data initialization has completed. Checking for a locked key next.

84h        Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next.

85h        The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next.

86h        The password was checked. Performing any required programming before WINBIOS Setup next.

87h        The programming before WINBIOS Setup has completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next.

88h        Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next.

**Checkpoint      Code  Description**

89h      The programming after WINBIOS Setup has completed. Displaying the
         power on screen message next.
8Bh      The first screen message has been displayed. The *<WAIT...>* message is
         displayed. Performing the PS/2 mouse check and extended BIOS data area
         allocation check next.
8Ch      Programming the WINBIOS Setup options next.
8Dh      The WINBIOS Setup options are programmed. Resetting the hard disk
         controller next.
8Fh      The hard disk controller has been reset. Configuring the floppy drive
         controller next.
91h      The floppy drive controller has been configured. Configuring the hard disk
         drive controller next.
95h      Initializing the bus option ROMs from C800 next. See the last page of this
         chapter for additional information.
96h      Initializing before passing control to the adaptor ROM at C800.
97h      Initialization before the C800 adaptor ROM gains control has completed. The
         adaptor ROM check is next.
98h      The adaptor ROM had control and has now returned control to BIOS POST.
         Performing any required processing after the option ROM returned control.
99h      Any initialization required after the option ROM test has completed.
         Configuring the timer data area and printer base address next.
9Ah      Set the timer and printer base addresses. Setting the RS-232 base address
         next.

**Checkpoint      Code  Description**

9Bh      Returned after setting the RS-232 base address. Performing any required
         initialization before the Coprocessor test next.
9Ch      Required initialization before the Coprocessor test is over. Initializing the
         Coprocessor next.
9Dh      Coprocessor initialized. Performing any required initialization after the
         Coprocessor test next.
9Eh      Initialization after the Coprocessor test is complete. Checking the extended
         keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID
         command next.
A2h      Displaying any soft errors next.
A3h      The soft error display has completed. Setting the keyboard typematic rate
         next.
A4h      The keyboard typematic rate is set. Programming the memory wait states
         next.
A5h      Memory wait state programming is over. Clearing the screen and enabling
         parity and the NMI next.
A7h      NMI and parity enabled. Performing any initialization required before
         passing control to the adaptor ROM at E000 next.
A8h      Initialization before passing control to the adaptor ROM at E000h completed.
         Passing control to the adaptor ROM at E000h next.
A9h      Returned from adaptor ROM at E000h control. Performing any initialization
         required after the E000 option ROM had control next.
Aah      Initialization after E000 option ROM control has completed. Displaying the
         system configuration next.
Abh      Uncompressing the DMI data and executing DMI POST initialization next.
B0h      The system configuration is displayed.
B1h      Copying any code to specific areas.
00h      Code copying to specific areas is done. Passing control to INT 19h boot
         loader next.

## B-4 Bus Checkpoint Codes

The system BIOS passes control to different buses at the following checkpoints:

**Checkpoint        Code  Description**
2Ah       Initializing the different bus system, static, and output devices, if present.
38h       Initialized bus input, IPL, and general devices, if present.
39h       Displaying bus initialization error messages, if any.
95h       Initializing bus adaptor ROMs from C8000h through D8000h.

### Additional Bus Checkpoints

While control is inside the different bus routines, additional
checkpoints are output to I/O port address 0080h as word to identify
the routines being executed. These are word checkpoints.

The low byte of checkpoint is the system BIOS checkpoint where control is
passed to the different bus routines.

The high byte of checkpoint indicates that the routine is being executed in
Different buses.

### High Byte

The high byte of these checkpoints includes the following information:

**Bits                      Description**
**Bits 7-4**
0000 Function 0. Disable all devices on the bus.
0001 Function 1.    Initialize static devices on the bus.
0010 Function 2.    Initialize output devices on the bus.
0011 Function 3.    Initialize input devices on the bus.
0100 Function 4.    Initialize IPL devices on the bus.
0101 Function 5.    Initiate general devices on the bus.
0110 Function 6.    Initialize error reporting on the bus.
0111 Function 7.    Initialize add-on ROMs for all buses.

**Bits 3-0**  Specify the bus
0          Generic DIM Device Initialization Manager.
1          Onboard System devices.
2          ISA devices.
3          EISA devices.
4          ISA PnP devices.
5          PCI devices.

# Notes

# Appendix C

# List of Figures

**Notes**

# Appendix D

# System Specifications

## Processors

One 370-pin Intel Pentium III FCPGA 600 MHz - 1 GHz or a Celeron FCPGA/PPGA 300-700 MHz CPU with a 133 or 100 MHz FSB

## Memory Capacity

3 DIMM slots to support a maximum of 512 MB SDRAM

## DIMM Sizes

128 MB / 256 MB / 512 MB  SDRAM modules supported

## SCSI Controller (5010H only)

Adaptec AIC-7899 for dual channel Ultra160 SCSI

## SCSI Backplane Controller (5010H only)

QLogic GEM354 controller for SAF-TE compliant SCA backplane

## SCSI Drive Bays (5010H only)

Two (2) drive bays to house two (2) standard **1" 80-pin** SCA SCSI drives

## Peripheral Bays

One (1) 3.5" floppy drive
One (1) slim CD-ROM drive
Two (2) 3.5 x 1" drive bays (for SCSI drives)

**PCI Expansion Slot**

One (1)  onboard 32-bit 33 MHz (5V) PCI slot (*Default-- bundled with a 32-bit 33 MHz 5V Riser Card)

**Power Supply**

<u>Type</u>: 1 x 200W with +3.3V, +5V, +12V, -5V and -12V main DC outputs and a 5V standby output.
<u>Input Voltage</u>: 100-240VAC (w/ ± 10% tolerance (units are auto-switching capable)
<u>Fans</u>: Two 4-cm ball bearing fans
<u>Operating Temperature Range</u>: 0 to 40 degrees C
<u>Humidity Range</u>: 5-90%, non-condensing
<u>Safety Regulations</u>: UL 1950, CUL, TUV
<u>EMI</u>: FCC part 15, CISPR 22 (EN 55022)

**Cooling Fans**

<u>System</u>: One (1) 10-cm ball bearing blower fan
            Optional: One (1) 4-cm ball bearing fan
<u>Onboard Fan Headers</u>: One(1) CPU, two (2) chassis and two (2) overheat fan headers; max. current = .035 amps/ea. or 1.2 amps/set of four

**Form Factor:** 370SSR+/370SSE+ motherboard: Full ATX
SC810 chassis: 1U rackmount

**Operating Systems Supported:** Windows NT, Windows 2000, Solaris, Netware, SCO UNIX and Linux

**Dimensions:** 16.7 x 1.7 x 22.7 in.; 425 x 44 x 560 mm (W x H x D)

**Weight:** <u>Net</u>: Full System: ~26 lbs. (11.8 kg.)
            <u>Gross</u>: Full System: ~32 lbs. (14.5 kg.)

**Regulations:** FCC Class B, CE, UL, TUV